Rampion 2 Wind Farm

Category 8: Examination Documents

Applicant's Responses to Relevant Representations

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Executive Summary

Following closure of the statutory consultation period under Section 56 of the Planning Act 2008 for Rampion 2, the Applicant has reviewed each of the Relevant Representations received from stakeholders who registered as Interested Parties in the Examination.

This document has been submitted for Examination Deadline 1 to provide the Applicant's responses to the Relevant Representations received, as categorised by the Planning Inspectorate:

- 10 representations from Local Planning Authorities;
- 18 representations from parish and towns councils and representations from 3 Members of Parliament;
- 12 representations from prescribed consultees;
- 91 representations from and on behalf of Affected Parties;
- 275 representations from members of the public or businesses; and
- 16 representations from non-prescribed organisations.

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1. Introduction

1.1 Introduction

Rampion Extension Development Limited (hereafter referred to as 'RED') (the 'Applicant') is developing the Rampion 2 Offshore Wind Farm Project ('Rampion 2') located adjacent to the existing Rampion Offshore Wind Farm Project ('Rampion 1') in the English Channel.

1.1.1 Rampion 2 will be located between 13km and 26km from the Sussex Coast in the English Channel and the offshore array area will occupy an area of approximately 160km^2. A detailed description of the Proposed Development is set out in **Chapter 4: The Proposed Development, Volume 2** of the Environmental Statement (ES) **[APP-045]**, submitted with the Development Consent Order (DCO) Application.

1.2 Purpose of this Document

1.2.1 Following closure of the statutory consultation period under Section 56 of the Planning Act 2008 for Rampion 2, the Applicant has reviewed each of the Relevant Representations (RRs) received from stakeholders who registered as Interested Parties in the Examination.

1.2.2 The registration of Interested Parties (IPs) began on 20 September 2023 and closed on 6 November 20203. During this period, a total of 425 Relevant Representations (RRs) were received by the Planning Inspectorate (PINS). The RRs were published on PINS' website 28 November 2023.

1.2.3 This document is submitted for Deadline 1 of the Examination and provides the Applicant's responses to the RRs received, as categorised by PINS:

- 10 representations from Local Planning Authorities;
- 18 representations from parish and towns councils and representations from 3 Members of Parliament;
- 12 representations from prescribed consultees;
- 91 representations from and on behalf of Affected Parties;
- 275 representations from members of the public or businesses; and
- 16 representations from non-prescribed organisations.

1.2.4 Details of the Applicant's response to each of those RRs received are set out in the subsequent sections of this document and its appendices.

1.3 Structure of the Applicant's Responses

1.3.1 This document sets out the Applicant's responses to RRs. For ease of referencing and to facilitate future cross-referencing, the Applicant has included references for the RRs.

1.3.2 There are also 29 Appendices which can be found at the end of this document.

1.3.3 The responses are divided into six categories as follows:

- Local Authorities (including both host and neighbouring authorities)
- Parish Councils and Members of Parliament
- Prescribed Consultees (as set out in Schedule 1 of the Infrastructure Planning (Application: Prescribed Forms and Procedures) Regulations 2010, noting that Parish Councils are also Prescribed Consultees)
- Affected Parties (Category 1, 2 and 3 Land Interests as identified in the Book of Reference **[PEPD-014]**)
- Members of the Public and Businesses
- Non-Prescribed Consultees

1.3.4 Each section below includes responses to each category of RR. For members of the public and businesses, the responses are provided by theme of comment rather than providing a separate response for each RR individually to avoid repetition where possible. Each RR is identified in the relevant table in this category where that Interested Party has raised a comment on that topic.

1.3.5 The response to Natural England sits in a separate section, as there were a number of appendices that also required responses. Further clarification is provided in paragraph 4.1.1.

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2. Applicant's Response to Relevant Representations: Local Planning Authorities

Table 2-1 Applicant's Response to Arun District Council

Ref	Relevant representation comment	Applicant's response
2.1.1	There is considered to be insufficient evidence and justification for selection of some aspects of the Project and the alternatives studied by the Applicant, taking into account environmental effects.	**Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** describes the alternatives studied by the Applicant and a comparison of their environmental effects.
2.1.2	ADC has concerns about the location, substantial size and the likely effects of Climping Compound during the construction period.	An outline of requirement and description of uses for the temporary construction compounds (TCCs) is given in the **Statement of Reasons** **[APP-021]** (**Paragraph 6.10** onwards) which states *"Temporary Construction Compounds will comprise of a hardstanding and a perimeter fence and will be used for the storage of plant and machinery and the stockpiling of materials, as well as for the provision of site management offices, parking, and welfare facilities for construction personnel (kitchen facilities, storerooms, toilets) in accordance with Health and Safety and Construction Design and Management Regulations".* The TCCs have been located strategically to each serve a section of onshore cable route during construction. A TCC is best located near to a trunk road for ease of transport links, outside of designated areas, of sufficient size to fulfil its purpose and on flat land where possible to reduce the need for cut/fill. Commitments are provided in the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) in relation to effects of construction compounds during and after construction including: • C-27 (Reinstatement) secured in the **Outline Code of Construction Practice** **[PEPD-033]** and Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**; • C-129 (Aggregate for Surface Protection) secured in the **Outline Code of Construction Practice** **[PEPD-033]** and Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**; • C-196 (Landscape Re-instatement) secured in the **Outline Landscape and Ecology Management Plan** **[APP-232]** and Requirement 13 of the **Draft Development Consent Order** **[PEPD-009]**; • C-204 (BS 5837:2012 (British Standards Institution, 2012), tree protection) secured in the **Outline Code of Construction Practice** **[PEPD-033]** and Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**; and • C-282 and C-285 (Arboricultural Method Statement) secured in the **Outline Code of Construction Practice** **[PEPD-033]** and Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. **Volume 2** of the ES [**APP-042–APP-072]** has assessed the effects of the Climping compound during the construction phase. Though impacts will arise, there are no significant effects arising from noise, dust, ecology, settlement/residential areas, Public Rights of Way access and traffic impacts when considering the embedded environmental measures secured in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**, the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** and **Outline Public Rights of Way Management Plan (PRoWMP)** **[APP-230]**. The Applicant acknowledges that there will be significant landscape and visual effects associated with the presence of the Climping compound on the local landscape character and views from PRoW 168, Church Lane/A259 (partly overlapped with the Arun Way and South Coast Cycle Route), Clymping Village Hall/recreation area and the Climping Caravan Site. These will be temporary and limited by retention of the perimeter vegetation along the A259. Where removal is required (as per the **Vegetation Retention Plan–Appendix B** of the

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Ref	Relevant representation comment	Applicant's response
		Outline CoCP **[PEPD-033]**), this will be temporary as per the commitment to reinstatement in the Outline Landscape and Ecology Management Plan (LEMP) **[APP-232]** is considered. Each of the above plans will be subject to submission of stage specific details for approval (including the stage specific CoCP and stage specific LEMP to Arun District Council who will also be consulted on the stage specific CTMP and stage specific PRoWMP (for approval by West Sussex County Council)). This is as per the Draft Development Consent Order (DCO) **[PEPD-009]** Requirements 22, 12, 24 and 20 respectively. See below chapters: • Chapter 17: Socio-economics, Volume 2 of the ES **[APP-058]**; • Chapter 18: Landscape and visual impact, Volume 2 of the ES **[APP-059]**; • **Table 2-3** of Appendix 18.3: Landscape assessment, Volume 4 of the ES **[APP-169]**; • **Table 1-3, Table 1-14, Table 1-16, Table 1-35 and Table 1-43 of** Appendix 18.4: Visual assessment, Volume 4 of the ES **[APP-170]**; • Chapter 19: Air quality, Volume 2 of the ES **[APP-060]**; • Chapter 21: Noise and vibration, Volume 2 of the ES **[PEPD-018]**; • Chapter 22: Terrestrial ecology and nature conservation, Volume 2 of the ES **[APP-062]**; and Chapter 23: Transport, Volume 2 of the ES **[APP-063]** for further information on the assessment of effects.
2.1.3	ADC has concerns of the lack of commitment and securing mechanism of mitigation, monitoring and compensation. It is not always clear mitigation/compensation is followed though to a securing mechanism and the Commitments Register appears more aspirational rather than embedded environmental measures.	The Commitments Register **[APP-254] (**provided at Deadline 1 submission) includes a column for the securing mechanism for each embedded environmental measure and its related commitment reference. This cross-refers to the mechanism (e.g. a requirement in Schedule 1 Part 3 of the Draft Development Consent Order (DCO) **[PEPD-009]**). Where there is an accompanying document such as an outline plan submitted with the DCO Application with which works must be undertaken accordance, this is also referred to under the 'Relevant Application Documents' column. The Applicant has provided an update to the Commitments Register **[APP-254]** at Deadline 1 to including further detail e.g. the full reference to DCO requirements and addition of the location of further information within the Application documents.
2.1.4	2. Outline Skills and Employment Strategy – limited detail is outlined within the Outline Skills and Employment Strategy and ADC is not listed as a consultee to this document. This is a concern given the adverse effects the District will experience during construction. ADC is expecting to be a recipient and consultee regarding benefits – being particularly interested in learning related opportunities at all levels including apprenticeships and universities. The Strategy is very high-level and it is not clear how different elements inter relate, for example, para. 2.3.3 refers to "Encouraging and supporting growth and employment in local supply chain companies… Increasing visibility of local SMEs" whereas supporting local business is not included as an objective in para 5.1.2. Further to this, the Environmental Statement (ES) (Chapter 17, Table 17.19) cites "RED will identify opportunities for companies based or operating in the region to access supply chain for the Proposed	The outline Skills & Employment Strategy (oSES) **[APP-256]** was intentionally high-level and the Applicant was not in a position to document concrete commitments without further consultation with key skills & employment stakeholder organisations in Sussex. The first tranche of consultation took place between July and October 2023, the results of which have fed into the second iteration of the oSES **[PEPD-037]**, submitted to the Examining Authority (ExA) in January 2024. This latest version of the oSES **[PEPD-037]** includes seven additional key skills & employment stakeholder organisations, including Arun District Council, alongside Horsham and Adur & Worthing Councils, educational institutions and Gatwick Airport. Following this series of consultation meetings and the examination itself, the Applicant will produce a final Skills & Employment Strategy outlining key objectives and activities, which is likely to include details regarding an apprenticeship scheme and engagement with educational institutions.

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Ref	Relevant representation comment	Applicant's response
	Development" as being secured through measure C-34 in the Outline Code of Construction Practice (OCCP). This measure, however, is not within the OCCP.	
2.1.5	Community Benefits Package - ADC has concerns about securing benefits from this package. Reference is made to the Community Benefits Package in the Outline Skills and Employment Strategy. Due to adverse effects identified (below) the Community Benefits Package is necessary to assist in mitigation.	Adverse impacts of the scheme have been greatly reduced, through evolving design (in response to consultation feedback and survey findings), the identification of mitigation solutions and their subsequent implementation through management plans. Community benefits are not a legal or DCO requirement and are quite distinct from the consenting process, a point reiterated in the UK Government (Department for Energy Security and Net Zero) response to the consultation on Community Benefits for Electricity Transmission Network Infrastructure (December 2023), which stated: *"The proposals on community benefits for electricity transmission network infrastructure discussed within this document will remain separate to the planning process. It will not be a material consideration in planning decisions, and not secured through those decisions."* That said, Rampion 2 will be a permanent neighbour in the Sussex community and the Applicant intends to develop and implement a community benefits package of proposals. In the second half of 2024, the Applicant will therefore be consulting key stakeholders and local communities on how a community benefit package could best support Sussex communities. The final package may include a range of initiatives to benefit business, education and residential communities.
2.1.6	Jobs – ADC has concerns that there will be a low number of locally skilled jobs created in Arun from the Project. The construction benefits are described in the ES as being 80 jobs across Sussex and operational benefits as being 100-110 jobs across Sussex (Chapter 17, Tables 17.25 and 17.32). The potential for employment by location may be influenced by the Skills and Employment Strategy in terms of preparing and informing local business. Details on this are therefore important.	It is acknowledged that the number of local jobs during the construction phase is low in comparison to other offshore wind farms. However, there are several important points to note: i. The 80 full time equivalent (FTE) construction phase jobs quantified in **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** are based on the annual number of jobs supported with suppliers in Sussex or accessed by local residents. This therefore does not include non-Sussex resident construction workers. ii. It is noted that the actual number of peak jobs onsite will be higher than this due to the inclusion of non-local jobs and the variations in construction activity across the construction phase. iii. The assessment is based on a realistic worst case scenario. This uses conservative assumptions about the level of local sourcing and assumes that the port used for construction will be outside the local study area. Operational employment benefits of 100-110 FTE jobs across Sussex are consistent with offshore wind farms so the Applicant disagrees that this represents a low number of skilled jobs. It should be noted, however, that these jobs are more likely to be accessed by residents of districts closer to the O&M base (which is likely to be located in Newhaven, East Suffolk). It is noted that positive activity and engagement that takes place due to the **Outline Skills and Employment Plan** **[PEPD-037]** and subsequent Skills and Employment Plan will help to increase the local benefits as the Project may be able to achieve more local employment due to the commitments outlined in the plan. ADC is correct to note that preparing and informing local businesses of supply chain opportunities may help the project achieve higher levels of local employment.
2.1.7	Tourism – ADC has concerns regarding displaced tourism from Arun. The ES (Chapter 17) notes that regarding construction effects of wind farms 'the research typically focusses on measuring opinions of what the impacts on the visitor economy could be prior to implementation of the	The study being referred to is a report commissioned by Glasgow Caledonian University (Moffat Centre, 2008). The study was used to assess whether government priorities for wind farms in Scotland were likely to have an economic impact on Scottish tourism. The methodology involved a comprehensive literature review of past studies throughout the world; a national visitor intercept survey at four destinations throughout Scotland where windfarms are present; an internet survey of potential visitors to Scotland; GIS and econometric modelling of the impact on local and national visitor economies based on results from the visitor

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Ref	Relevant representation comment	Applicant's response
	scheme. However, ex-post research suggests that even where there have been negative effects, these often occur in the form of displaced tourism with visitors diverting to neighbouring areas instead'. Whilst this may be considered a neutral effect at the wider area level, it suggests areas directly affected by construction such as Arun will experience at least temporary adverse effects.	surveys. One of the key aims was to undertake interviews with individuals who had actual experience of wind farms (as opposed to mocked up pictures in before/after studies) in part because some held the belief that individuals inadvertently exaggerated their reactions. The intercept surveys were based on onshore wind farms[1]. For onshore wind, displacement of visitors is a greater issue than in offshore wind, particularly in areas that are very close proximity to turbines. This is less of an issue for offshore wind because the turbines are further away and visible along long stretches of the coast. The results are therefore more relevant for onshore wind farms. Nevertheless, the study found that the economic impact on the tourism sector across Scotland would be 'very small'. After this study, given the increase in wind farm development in Scotland, the Scottish Government asked ClimateXChange to identify what new information exists on the impact on tourism of wind farms, and to consider what new conclusions may be drawn from this information (ClimateXChange, 2012 (see **Appendix 1**)). This study found no new evidence to suggest that wind farms are having a discernible negative economic impact on tourism in Scotland. More local evidence from the tourism sector ONS employment data pre, during and post construction of Rampion 1 is presented in **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]**. As noted in the assessment this shows continued growth of the sector across Sussex when comparing pre construction to post construction (pre Covid-19 pandemic). Likewise, even through the COVID-19 pandemic, Arun has seen steady growth in tourism sector employment during this period, indicating that Rampion has not led to a decline in the tourism sector in Arun. It should be noted that any disruption from construction activity would be temporary, short term duration and would be unlikely to be significant enough to alter visitor perceptions of Arun as a place to visit. C-33 states "*An Outline CoCP will be adopted to minimise temporary disturbance to residential properties, recreational users and existing land users. It will provide details of measures to protect environmental receptors.*"
2.1.8	Tourism Assets – ADC has concerns regarding the adverse effects on tourist assets within Arun. Chapter 17 of the ES states that at the local level 'installation activity along the onshore cable corridor may have a negative impact on walking and cycling routes, coastal paths, holiday parks and other tourism-related assets that are located in close proximity to onshore construction works… the assessment concludes that during the construction phase there would be major / moderate, and therefore significant effects on a limited number of tourist destinations. These locations are Climping Beach, Climping Camp Site, Climping Caravan Park and Washington Caravan Park'. Many of these locations are in Arun and there are more in the vicinity of Climping Compound. Whilst at County level, it may be a negligible effect, however for Arun, the effect on residents and local businesses will be significant in some instances and this should be identified and mitigated.	The assessment on tourism did not find any major / moderate impacts. The reference to major / moderate and significant impacts is related to of the landscape and visual impact assessment (LVIA) which assesses the visual effects likely to be experienced by people as reported in **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** and **Chapter 15: Seascape landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**. These assessments identified significant visual effects would occur at a limited number of tourist destinations with the effects of the onshore elements of the Proposed Development limited to the construction phase. However, it does not follow that effects on tourism and tourism assets will also be significant. The tourism assessment considers the potential impact on onshore tourism sectors in the round (along with baseline analysis, noise and traffic) and the duration of these effects. Given the embedded environmental measures detailed in the tourism assessment (such as commitments C-1 (buried onshore cable route), C-22 (construction working hours), and C-128 (temporary crossings in place for minimal time) which is secured by Requirement 22 and 23 of the **Draft Development Consent Order [PEPD-009]**). the Applicant did not find that there would be significant effects on the volume and value of onshore tourism assets.

[1] Braes of Doune Wind far, Buolfruich Wind farm, Causeymire Wind farm, Forss Wind farm, Dunlaw Wind farm and Dalswinton Wind farm

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Ref	Relevant representation comment	Applicant's response
2.1.9	Amenity – concerns regarding the significant effects on public rights of way within Arun, some of which are heavily used.	All Public Rights of Way (PRoW) affected during onshore construction works are identified in **Section 4.3** within the **Outline Public Rights of Way Management Plan [APP-230]**. Table 4-1 within the **Outline Public Rights of Way Management Plan [APP-230]** includes each PRoW impacted by the onshore elements of the Proposed Development, the type of impact and if this impact in temporary or permanent. Paragraph 4.2.5 within the **Outline Public Rights of Way Management Plan [APP-230]** secured via Requirement 20 of the **Draft Development Consent Order (DCO) [PEPD-009]** confirms that no PRoW will be permanently affected by the Proposed Development. Section 5 of the **Outline Public Rights of Way Management Plan [APP-230]** outlines the proposed management measures for the impacted PRoWs including (but not limited to): • Temporary closures and diversions; • Managed crossings; • Shared routes; • Inspection and maintenance; • Signage management; and • PRoW sequencing. Section 5.2 of the **Outline Public Rights of Way Management Plan [APP-230]** also identifies commitments (C-18, C-32, C-161, C162, and C-202) within the **Commitments Register [APP-254]** (updated for the Deadline 1 submission) which have been incorporated into the management of PRoWs which are impacted by the onshore elements of the Proposed Development. Details of the proposed PRoW temporary closures and PRoW diversions are provided in the **Access, rights of way and streets plan [APP-012]**. The provision of a Public Rights of Way Management Plan to be submitted to and approved by the highway authority in consultation with the relevant planning authority is secured via Requirement 20 in the **draft Development Consent Order [PEPD-009]**.
2.1.10	Strategic Housing Allocation - the cable route crosses the housing allocation 'Strategic Housing Allocation SD4 Littlehampton – West Bank' as identified in the Arun Local Plan (adopted 2018). No assessment has been identified which considers the effect on the strategic housing allocation and cable route in terms of the implications and any sterilisation of land.	The cable route is proposed to be drilled underneath a section of the allocated land, without breaking the surface. This is secured through Appendix A Crossing Schedule of the **Outline Code of Construction Practice (CoCP) [PEPD-033]** and Requirement 22 of the **Draft Development Consent Order [PEPD-009]**. This site has been considered within **paragraph 4.7.150** of the **Planning Statement [APP-036]** which states that 'The Proposed Development has been designed to take into account the allocation and approved outline application for the site (Arun District Council application ref: CM/1/17/OUT), which identifies a new access off the A259, and the Proposed Development will not preclude the allocation coming forward'.
2.1.11	ADC acknowledge that the spatial extent of the offshore array area and quantity of wind turbine generators has been reduced. However, ADC continues to have significant concerns regarding the scale relative to the proximity to the coastline and the resulting significant visual effects.	The visual effects of Rampion 2 wind turbine generators (WTGs) are assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**. The Applicant notes that significant effects on views experienced by people have been identified at a number of representative viewpoints from settlements and seafronts along this section of the Arun coastline. The array area is located approximately 14 km from the closest point of the Arun coastline. Design principles are described in Section 15.7 of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**, which sets out how the design evolution has resulted in changes and embedded environmental measures to help mitigate the visual effects of the Proposed Development, in response to stakeholder comments, including a reduction in the spatial extent of the Rampion 2 array area, it's spread and quantity of wind turbine generators (WTGs) within it. Opportunities to reduce effects

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		through turbine height reduction are limited due to the technical and economic requirements associated with producing renewable energy as well as other environmental factors. For the reasons stated above the need to retain flexibility of WTG numbers, size and location within the Rampion 2 array area through the planning stages and assessment of a Maximum Design Scenario is necessary. The Applicant considers that the visual effects of the Proposed Development are outweighed by the significant scheme benefits, expressed in the **Planning Statement** **[APP-036]**, and thus compensation is not required to make the proposal acceptable in planning terms.
2.1.12	ADC has significant concerns regarding the visual effects associated with the temporary (approximately 3 years and 5 months) construction horizontal directional (HDD) compound and Climping Compound, which is of a significant size and duration.	The temporary construction compound at Climping (Climping Compound) is associated with the onshore cable corridor and is to be used for up to 3.5 years and the Horizontal Directional Drill (HDD) compound for trenchless crossing is to be used for a much shorter period of 3 to 4 months (see Table 4-22, **Chapter 4: The Proposed Development, Volume 2** of the Environmental Statement (ES) [**APP-045]**). The visual effects of the Climping Compound are assessed in **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**, **Appendix 18.2: Viewpoint analysis, Volume 4** of the ES **[APP-168]** and **Appendix 18.4: Visual assessment, Volume 4** of the ES **[APP-170]**. The visual assessment takes account of a range of embedded environmental measures to reduce significant effects as far as possible, this includes commitments C-6 (secured in Schedule 1, Part 1 of the **Draft Development Consent Order** **[PEPD-009]**), C-115 and C-174 outlined in the **Commitment Register** **[APP-254]** (updated for the Deadline 1 submission), secured in the **Outline Code of Construction Practice** **[PEPD-033]** and Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. During the construction phase, the residual visual effects of the Climping Compound will have a significant effect on the views from PRoW 168 and the views from part of the A259 and Church Lane which are overlapped by the South Coast Cycle Route / Sustrans Cycle Route 2, and Arun Way. These views and the level of effect will vary according to the seasonal change in vegetation from roadside trees. All of these effects will be temporary and limited to the construction phase. During the operation and maintenance phase, the Climping Compound site will be reinstated to arable field within one year and the residual effects will not be significant. During the decommissioning phase, the onshore cable will left in situ (see Section 9 of **Chapter 4: The Proposed Development, Volume 2** of the ES [**APP-045]**) and the decommissioning phase was scoped out of the assessment for the onshore cable corridor due to the lack of potential landscape and visual effects (see paragraph 18.4.8, **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**).
2.1.13	ADC also has concerns regarding onshore landscape scarring and the effects on landscape landform and visual character. Reference is made to restatement of construction compounds and onshore cable corridors. We expect reinstatement to be an appropriate like for like replacement, taking into account new/emerging threats from diseases and biodiversity enhancements.	As outlined in **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**, summary Table 18-45, there will be no residual effects on landscape character or landform beyond the construction phase or during the operation and maintenance phase. An **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** and **Outline Landscape and Ecology Management Plan (LEMP)** [**APP-232**] have been developed to ensure the reinstatement of landscape features and habitats following construction of the onshore cable corridor and use of the temporary construction compounds. The maintenance period for the scheme extends up to 10 years. Landscape features or elements (principally hedgerows / trees woodland) that may be lost or retained during construction are documented in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-062]** and indicated in Figures 7.2.1- 7.2.3 of the **Outline CoCP** **[PEPD-033]**. Where removal is required (as per the **Vegetation Retention Plan–Appendix B** of the **Outline CoCP** **[PEPD-033]**), this will be temporary as per the commitment to reinstatement in the **Outline LEMP** **[APP-232]**. Each of the above plans will be subject to submission of stage specific details for approval (including the stage specific CoCP and stage specific LEMP to Arun District Council. This is as per the **Draft Development Consent Order** **[PEPD-009]** Requirements 22, 12, 24 and 20 respectively.

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		Damage to grasslands will be minimised by timing of the work outside of the winter period (see C-117, **Commitments Register [APP-254]** (provided at Deadline 1 submission) which is secured in the **Outline CoCP [PEPD-033]** and Requirement 22 of the **Draft Development Consent Order [PEPD-009]**) that will help maintain soil structure and the sward at the edge of the working areas. The reinstatement of the majority of the habitat will take place within 2 years of construction works occurring (see commitment C-103, **Commitments Register [APP-254]** (provided at Deadline 1 submission) which is secured in the **Outline Code of Construction Practice [PEPD-033]** and Requirement 22 of the **Draft Development Consent Order [PEPD-009]**), however it is expected that these areas will be rapidly returned to grassland to avoid bare soils being washed away during subsequent periods of flood. The improved grassland will be reinstated using a commercial seed mix, whilst the semi-improved and marshy grassland will be allowed to become reinstated from the existing seed bank to maintain species diversity and character (see **Outline LEMP** [**APP-232**] which is secured through Requirement 12 of the **Draft Development Consent Order [PEPD-009]**). **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** allows for discussion with landowners in the first instance to deliver enhancements, compensation, and gain (through the calculation of Biodiversity Net Gain (BNG) using the Biodiversity Metric). It is understood by the Applicant that some landowners will not want to deliver enhancements for biodiversity on their land due to current use (e.g. losing harvestable area) and therefore the **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** provides a hierarchy of choices on how to deliver biodiversity units. Section 5.3 in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** describes how biodiversity units will be sourced, and the prioritisation of local delivery. On current understanding, it is likely that all required biodiversity units could be delivered within 2km of the proposed DCO Order limits. Local delivery is incentivised through the metric so there is no need for this to be secured further. To ensure that the habitat reinstatement is carried out successfully, the **Draft Development Consent Order [PEPD-009]** includes Requirement 12 securing mitigation through provision of reinstatement or landscaping, Requirement 13 with regards timing and maintenance, Requirement 14 securing Biodiversity Net Gain (BNG) and Requirement 22 securing stage specific Codes of Construction Practice. Requirement 12 ensures that a Landscape and Ecological Management Plan is provided for agreement with the relevant planning authority and Natural England. Requirement 13 ensures that the Landscape and Ecological Management Plan is delivered as agreed, whilst Requirement 14 secures the agreement and implementation of a BNG strategy. Requirement 22 ensures that a stage specific Code of Construction Practice is submitted and approved by the relevant planning authority in consultation with the Environment Agency, the statutory nature conservation body, the highway authority and the lead local flood authority. Individual commitments also add further impetus to deliver successful restoration. This includes Commitment C-103 that allows for a time limit for habitat restoration across the majority of the construction area (excluding temporary construction compounds, cable joint bays the landfall and the onshore substation location), whilst commitment C-115 minimises habitat loss of hedgerows and tree lines and proposes ways in which the reinstatement can take place. Commitment C-199 provides for the long-term management and monitoring of reinstated habitats. C-103 and C-115 are secured in the **Outline CoCP [PEPD-033]** and Requirement 22 of the **Draft Development Consent Order [PEPD-009]**. C-199 is secured in the **Outline LEMP [APP-232]** and Requirement 13 of the **Draft Development Consent Order [PEPD-009]**.
2.1.14	ADC note that the onshore cable route has been refined to approximately 40m in width with permanent infrastructure corridor width up to 25m (or wider at trenchless crossing locations). We seek clarification and detail on the surface treatments within these permanent infrastructure corridors, any requirements for easements in these areas and whether this impacts reinstatement.	The commitment to reinstatement along the infrastructure corridor is set out in Section 4 of the **Outline Landscape and Ecology Management Plan (LEMP) [APP-232]**. This accounts for easement requirements for example Annex A of the **Outline LEMP [APP-232]** details the species selection and location of planting to allow for hedgerow reinstatement to comply with the planting and management wayleaves for underground electrical cables. Otherwise, the surface treatments would be reinstated to match existing as set out in Section 4 of the **Outline LEMP [APP-232]** which is secured through Requirement 12 of the **Draft Development Consent Order [PEPD-009]**.

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2.1.15	We note that the landscape reinstatement will be subject to an on-going minimum 10- year monitoring programme. The maintenance programme will need to align and comply with the requirements of the biodiversity net gain for Nationally Significant Infrastructure Projects, which is expected to come into force in 2025; the same year the Project is planned to commence construction.	The Applicant is committed to delivering Biodiversity Net Gain as outlined in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the Environmental Statement (ES) **[APP-193]** and commitment C-104 in the **Commitment Register [APP-254]** (provided at Deadline 1 submission). The delivery of BNG is secured by Requirement 14 of the **Draft Development Consent Order [PEPD-009]**. This requirement is distinct from the requirement to deliver landscaping as reinstatement and mitigation. It should be noted however, that the ten-year period described within the **Outline Landscape and Ecology Management Plan** [**APP-232**] is focused on ensuring establishment of reinstated habitats has been successful. Habitats that have been reinstated will be returned to the landowners for management in line with that being undertaken in the land parcel (e.g. once established a section of hedgerow that was reinstated, would be managed in the same way as the rest of the field boundary). The Proposed Development is not subject to mandatory BNG and the Applicant is delivering BNG voluntarily. The Applicant is content that the proposed approach to deliver BNG is the most effective to secure the 35 year maintenance period required for success.
2.1.16	ADC has significant concerns regarding the cable route passing beneath and near to the Climping Site of Special Scientific Interest (SSSI) and ecological sensitive areas. Nationally scarce invertebrates have been identified on the sand dunes of Climping beach. We note access would be restricted in the SSSI and no groundbreaking activity. However, the potential for indirect effects is unclear and unplanned events could lead to localised degradation of habitat within the SSSI, which is of a concern.	The Applicant would not expect any effects on the habitats or invertebrates using the sand dunes associated with works at the landfall. The closest proposed works where construction activity is to take place (Works No. 8 within the **Onshore Works Plans [PEPD-005]**) is in excess of 175 m from the boundary of the Climping Site of Special Scientific interest (SSSI). All closer works (including beneath the Climping SSSI) are proposed to be either underground (i.e. the Horizontal Directional Drill (HDD)) secured through Works Nos. 6 and 7 of the **Draft Development Consent Order [PEPD-009]** or pedestrian traffic only (e.g. monitoring of the drill head path) restricted by the **Outline Construction Method Statement [APP-255]**, secured through Requirement 23 of the **Draft Development Consent Order [PEPD-009]**. Under all normal circumstances, indirect effects on the SSSI such as dust deposition and pollutant losses can be effectively managed through the **Outline Code of Construction Practice (CoCP) [PEPD-033]** (including for example commitments C-24, C-77, C-105, C-107, C-143, C-149 and C-207) secured through Requirement 22 within the **Draft Development Consent Order [PEPD-009]**. Only in the event of an unforeseen break-out of drilling fluid to the surface within the SSSI would any effects on habitats and the invertebrates they support be realised. Given the design and ways of working described in the **Outline Construction Method Statement [APP-255]** and **Outline CoCP [PEPD-033]**, the risk of this occurring is very low.
2.1.17	We note that the Applicant seeks to achieve biodiversity net gain of at least ten percent onshore for the Project. Biodiversity net gain has not been assessed at the district level. We would expect biodiversity net gain to be achieved within the administrative area of Arun.	The Applicant is committed to delivering Biodiversity Net Gain (BNG) as outlined in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** provided with the Development Consent Order (DCO) Application. Detailed calculation of losses and details of the gains to be made will come forward on a staged basis at the detailed design stage. With the detailed design and identification of opportunities to secure biodiversity units, calculations will show losses and gains. **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** demonstrates losses based on a realistic worst case to demonstrate that the scale of the overall reduction in biodiversity value can be compensated for and a net gain achieved. BNG is secured through Requirement 14 of the **Draft Development Consent Order [PEPD-009]**. Section 5.3 in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** describes how biodiversity units will be sourced, and the prioritisation of local delivery. On current understanding, it is likely that all required biodiversity units could be delivered within 2km of the proposed DCO Order limits. Local delivery is incentivised through the Biodiversity Metric workbook, so there is no need for this to be secured further.
2.1.18	We acknowledge that marine biodiversity is not yet mandatory and the Applicant is exploring opportunities for marine benefits. ADC would expect marine benefits and contribution to marine restoration projects such as Help the Kelp. Consideration should be given to a marine biodiversity net gain assessment.	Whilst Marine Net Gain is not currently mandated in the same way as onshore (terrestrial) Biodiversity Net Gain, in recognition of the principles set out in the National Policy Statement (NPS) EN-1 (Department for Energy Security and Net Zero (DESNZ), 2023a) (published in November 2023) which took effect in January 2024, and is a relevant consideration in the decision-making process, the Applicant is currently exploring opportunities to partner with organisations who are able to deliver marine benefits in the region.

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2.1.19	There are concerns regarding the adequacy of the noise assessment which in ADC's view may underestimate the construction and operation noise effects (of the proposed Climping Compound). ADC has concerns regarding the modelling of the noise sources, adequacy of the assessment of background noise levels (in relation to the Climping Compound), omissions from the assessment and validity of the assessment method. Further information is required before ADC can determine whether the assessment is a representative assessment of construction noise and vibration.	Noise at the Climping Compound has been assessed in **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]** using *British Standard BS5228-1:2009 + A1:2014 Code of practice for noise and vibration control on construction and open sites Part 1: Noise* (British Standard Institution (BSI), 2014). The Code of Practice for Construction Noise (BSI, 2014) is a statutorily supported approach to assessment of construction noise; as such The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015 approves BS5228-1 as the approved code of practice for assessing construction noise under Section 71 of the Control of Pollution Act. Therefore, this is considered to be an accepted approach to the assessment of noise and vibration in EIA. BS5228-1 methodology does not use background noise levels (L_{90}), instead looking at the existing ambient noise ($L_{Aeq,T}$) and BS5228-1 Annex E states: *"Noise levels generated by site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB from site noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in significant effect."* The use of the ABC method from Annex E of BS5228-1 is also stated as being an appropriate means of achieving the above aims. Therefore, the Applicant considers that construction noise has been assessed appropriately. Commitment C-263 in the **Commitments Register** [APP-254] (included within the **Outline Code of Construction Practice [PEPD-033]** and secured through Requirement 22 within the **Draft Development Consent Order [PEPD-009]**) has been updated for Deadline 1 to state that during detailed design the appointed contractor will review the construction noise assessments and where any significant deviation from the initial sound level predictions is identified, such that levels in excess of the BS5228-1, the Noise and Vibration Management Plan (NVMP) shall identify the necessary mitigation to avoid this. If necessary, a Section 61 application will be made to the relevant Local Planning Authority.
2.1.20	ADC has identified and prepared a list buildings and areas of character which are non-designated heritage assets. There are two associated Local Plan policies (HER DM2 and HER DM4). In terms areas of character, some adjoin conservation areas in Littlehampton. The most relevant is the South Terrace Area of Character adjoining the Littlehampton Seafront Conservation Area. Within the historic environment assessment (Chapter 25 of the ES), it states that 'Assessment of effects on Locally Listed Buildings or Structures of Character and Areas of Character, as identified by Arun District Council, is presented in Sections 25.9 to 25.11'. An assessment has not been undertaken for non-designated heritage assets, even though some are within the 1km study area. In Appendix 25.7 of the ES, Table 5.1 consists of the Step 1 Assessment which fails to identify No's 45-47 South Terrace, which are listed buildings. It also fails to identify any of the locally listed buildings or Area of Character.	*No's 45-47 South Terrace*, identified as 6, St Augustine's Road (NHLE 1191074) within Table 5.1, **Appendix 25.7: Settings assessment scoping report, Volume 4** of the ES **[APP-213]**, is scoped out of the ES Assessment. A proportionate approach was undertaken with regards to the scoping in of heritage assets which may be affected by change to their setting. This approach is described in Section 3 of **Appendix 25.7: Settings assessment scoping report, Volume 4** of the ES **[APP-213]**. This identifies those heritage assets most likely to be sensitive to changes in setting resulting from the Proposed Development. The South Terrace Area of Character (and the locally listed buildings at 48-95 South Terrace & 16 Granville Road, which fall within) lies adjacent to the Littlehampton Seafront Conservation Area, which was scoped into the assessment of effects relating to offshore elements of the Proposed Development, see **Appendix 25.7: Settings assessment scoping report, Volume 4** of the ES **[APP-213]**. The magnitude of change will be of equivalent magnitude to that of the conservation area which the significance of the residual effect is deemed Minor Adverse and Not Significant in EIA terms, with the effect being no greater, if not less, as a result of its local heritage significance.
2.1.21	Within the population and human health assessment (Chapter 28 of the ES), we seek clarification as to why a determination for sensitivity and magnitude can produce two different outcomes. A low sensitivity and a high magnitude of	The Population and Health Significance Matrix applied (Table 28-17 in **Chapter 28: Population and human health, Volume 2** of the Environmental Statement (ES) **[APP-069]**) is derived from '*Table 4.1: Generic indicative EIA significance matrix*' of the "*Institute of Environmental Management and Assessment (IEMA) Guide to: Determining Significance for Human Health in Environmental Impact Assessment*" (IEMA, 2022), which informs best practice. As explained in paragraph 4.9 of the IEMA guide

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	impact can deliver a minor or moderate effect. This ambiguity could lead to a misunderstanding as to whether the Project leads to a non-significant or significant effect on a particular receptor.	(IEMA, 2022), the generic indicative significance matrix is a tool to assist with professional judgement on significance, where there is not a clear cut off between categories and terminologies, and where any judgements made must be supported by appropriate evidence and justification to remove ambiguity on the significance conclusions reached. This approach is reiterated in **paragraphs 28.8.11** and **28.8.12** of **Chapter 28: Population and human health, Volume 2** of the ES **[APP-069]**. As outlined in **paragraph 28.8.9** of **Chapter 28: Population and human health, Volume 2** of the ES **[APP-069]**, the sensitivity applied throughout all of the health assessment is "Low". Therefore, based on the significance matrix provided in **Table 28-17**, the only possible instance where there could be a moderate (significant) or minor (not significant) effect is where a high magnitude of impact on population and human health occurs. Should this occur, the criteria in **Table 28-18** would assist in assigning a level of significance. However, no high magnitudes of impact are reported across any of the health determinants assessed, which removes any need for a professional judgement to be made between a moderate (significant) or minor (not significant) effect.
2.1.22	The Equalities Impact Assessment (Appendix 28.3 of the ES) is based on the Equalities Act and makes specific reference to 'protected characteristics' as defined in Section 4 of the Equalities Act. However, the assessment (Tables 1.4, 1.5 and 1.6) is not limited to the protected characteristics (i.e. age, sex, race, religion etc.). Clarification is therefore required to assess the protected characteristics as per the Equalities Act.	**Appendix 28.3: Equalities Impact Assessment, Volume 4** of the ES **[APP-221]** provides a systematic approach to assess the likely or actual effects of policies or policies or proposals on social groups with protected characteristics (as defined by the *Equality Act 2010*), set out in **Table 1.1**. As stated in **paragraph 1.3.2** of the **Appendix 28.3: Equalities Impact Assessment, Volume 4** of the ES **[APP-221]**, the protected characteristics are correctly identified and the assessment has been undertaken as per the Equalities Act. The assessment tables (**Table 1.4, Table 1.5, and Table 1.6** of the **Appendix 28.3: Equalities Impact Assessment, Volume 4** of the ES **[APP-221]**) refer to these specific protected characteristics, and then provide additional context to the distribution within that characteristic. As an example, within the Age characteristic, any particular age group that might have a disproportionate sensitivity is considered, which helps test for any illegal discrimination, but then also helps consider what the potential influence might be within this group. Therefore, all equality groups referred to in **Table 1.4, Table 1.5, and Table 1.6** of **Appendix 28.3: Equalities Impact Assessment, Volume 4** of the ES **[APP-221]** are listed below, with their protected characteristic confirmed in brackets: • Children (Age); • Young people (Age); • Older people (Age); • Disabled people (Disability); • Pregnant people (Pregnancy and maternity); • People with ethnic minority backgrounds (Race); • Men (Sex); • Women (Sex); and • Lesbian, Gay, Bisexual, Transgender + (LGBTQ+) people (Sexual orientation / Gender reassignment). It should be noted that all protected characteristics (and associated equality groups) were considered in **Appendix 28.3: Equalities Impact Assessment, Volume 4** of the ES **[APP-221]**). However, the inclusion of these are guided by their relevance to the assessment themes or identified community facilities within the EqIA Study Area. In this instance, "being married or in a civil partnership" and "religion or belief" were not included.

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		The approach ensures that all the protected characteristics are appropriately considered, whilst providing the additional distinction aids in informing the team, project, design, mitigation and support initiatives to address relative sensitivity and support the wider objective of the Equality Act 2010 (i.e. to improve equality opportunity and foster closer relations between those with and without a protected characteristic).

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Table 2-2 Applicant's Response to Mid Sussex District Council

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Summary		
2.2.1	1.1 In summary the key issues for Mid Sussex are as follows: a) This Council is supportive of the principle of Low Carbon Energy Schemes provided that any adverse local impacts, including cumulative impacts, can be made acceptable.	Mid Sussex District Council's being supportive of the principle of Low Carbon Energy Schemes is welcomed by the Applicant. The Proposed Development will help meet the urgent need for new renewable energy infrastructure in the UK and supporting the achievement of the UK Government's climate change commitments and carbon reduction objectives. The Proposed Development type is recognised as being a critical national priority in the revised NPS EN-1 (Department for Energy Security and Net Zero (DESNZ), 2023a) and NPS EN-3 (DESNZ, 2023b), which came into force in January 2024 and are considered to be relevant to the determination of the DCO Application. This additional generating capacity will contribute towards meeting the urgent need for new energy infrastructure in the UK, provide enhanced energy security, support the economic priorities of the UK Government and, critically, make an important contribution to decarbonisation of the UK economy. The Proposed Development will contribute materially towards meeting the urgent national need for renewable electricity, significantly reducing carbon emissions from energy. The assessment set out in **Chapter 29: Climate change, Volume 2** of the ES **[APP-070]** concludes the Proposed Development has a lifetime greenhouse gas (GHG) emissions saving of 35,901 kilotonne carbon dioxide equivalent ($ktCO_2e$). The Proposed Development will continue to offset greenhouse gas (GHG) emissions until 2050, and therefore make a positive contribution the UK Government target to reach net zero emissions in 2050. Section 104 of the Planning Act 2008 outlines that the DCO Application must be decided in accordance with the relevant NPS (in this case: NPS EN-1 (DECC, 2011a), NPS EN-3 (DECC, 2011b) and NPS EN-5 (DECC, 2011c) with NPS EN-1 (DESNZ, 2023a), NPS EN-3 (DESNZ, 2023b) and NPS EN-5 (DESNZ, 2023c), that came into force in 2024, relevant considerations in the decision-making process) unless (inter alia) the adverse impacts of a proposal would outweigh its benefits. **Section 5.4** of the **Planning Statement** **[APP-036]** summarises the potential environmental, social and economic benefits and the adverse impacts of the Proposed Development drawing on relevant information in line with NPS EN-1 (DECC, 2011a and DESNZ, 2023a). Section 5.5 of the **Planning Statement** **[APP-036]** sets out the planning balance where the potential benefits and impacts of the Proposed Development are weighed up. Although, inevitably, there are adverse impacts associated with the scale and type of infrastructure that forms the Proposed Development, the Applicant considers that the planning balance is firmly in favour of the Proposed Development and the benefits outweigh the adverse impacts.
2.2.2	b) Mitigation of landscape impacts is necessary, particularly from PROW 1T. Loss of vegetation should be minimised. c) The proposed extension to the existing substation will have a degree of less than substantial harm in respect of the special interest of identified heritage assets. Consideration should be given to further planting around the site to mitigate any negative impact on views from the PROW to the east, and Bob Lane to the south	**Section 3.3** of the **Design and Access Statement (DAS)** **[AS-003]** secures the design principles that are embedded to manage the landscape impacts of the National Grid Bolney substation extension works. This includes Indicative Landscape Plans (ILP, **Appendix C**) for the existing National Grid substation at Bolney which shows the retention of the existing vegetation and the associated design principles (**paragraph 3.3.12** of the **DAS** **[AS-003]**) with which the detailed design must accord. The ILP shows the area of additional planting proposed along the border to Bob Lane to the south and which is secured as a design principle in the **DAS** **[AS-003]** in paragraph 3.3.12 to be secured through Requirement 9 of the **Draft Development Consent Order** **[PEPD-009]**. The **Outline Landscape and Ecology Management Plan** **[APP-232]** (secured via Requirement 12 within the **Draft Development Consent Order** **[PEPD-009]** details further information on landscaping. Together with the **Draft Development Consent Order** **[PEPD-009]** Requirement 13 this secures the provision of a

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Ref	Relevant representation comment	Applicant's response
		detailed landscape plan for the existing National Grid Bolney substation extension works in accordance with design principles in the **DAS** **[AS-003]** for the approval of Mid Sussex District Council (MSDC). Loss of vegetation has been minimised during the construction phase including areas of vegetation to be retained which is presented in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** – **Appendix B – Vegetation Retention Plans:** Figure 7.2.1k, Figure 7.2.2h and Figure 7.2.3k for the existing National Grid Bolney substation extension works. The **Outline CoCP** **[PEPD-033]** is secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**.
2.2.3	d) Any above ground structures that create an impermeable area will require some drainage so as not to create or exacerbate flood risk.	The **Outline Operational Drainage Plan** **[APP-223]** provides the surface water drainage proposals for the National Grid Bolney substation extension works (**Section 3.4**) and the detailed design will be submitted to the Lead Local Flood Authority for approval as per the **Draft Development Consent Order** **[PEPD-009]** Requirement 18.
2.2.4	e) To mitigate the impact on residents from construction noise, it is recommended that the applicant amends their proposed core construction hours to: 08:00 to 19:00 hours Monday to Friday; and 09:00 to 13:00 hours on Saturday."	Working hours are stated in Section 4 of **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** and are outlined in Section 4.4 of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**. Following receipt of Relevant Representations and information shared at Issue Specific Hearing 1, C-22 within the **Commitments Register** **[APP-254]** has been updated at the Deadline 1 submission to the following: '*Core working hours for construction of the onshore components will be 08:00 to 18:00 Monday to Friday, and 08:00 to 13:00 on Saturdays, apart from specific circumstances that are set out in the Outline COCP, where extended and continuous periods of construction are required.* *Prior to and following the core working hours Monday to Friday, a 'shoulder hour' for mobilisation and shut down will be applied (07:00 to 08:00 and 18:00 to 19:00). The activities permitted during the shoulder hours include staff arrivals and departures, briefings and toolbox talks, deliveries to site and unloading, and activities including site and safety inspections and plant maintenance. Such activities shall not include use of heavy plant or activity resulting in impacts, ground breaking or earthworks.'* This has been updated in the **Outline Construction Traffic Management Plan** **[PEPD-035a]** for the Deadline 1 submission and will be updated in the **Outline Code of Construction Practice** **[PEPD-033]** for the next submission of this document. As outlined in the **Outline Code of Construction Practice** **[PEPD-033]**, no activity outside these hours (including Sundays, public holidays, or bank holidays) will take place apart from under the following circumstances: • Where continuous periods (up to 24 hours, 7 days per week) of construction work are required for HDD (as HDD is a continuous activity that cannot be paused once started); • for other works requiring extended working hours such as concrete pouring which will require the relevant planning authority to be notified at least 72 hours in advance; • or the delivery of abnormal loads to the connection works, which may cause congestion on the local road network, and will require the relevant highway authority to be notified at least 72 hours in advance; or • as otherwise agreed in writing with the relevant planning authority.

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2.2.5	f) The applicant's commitment to deliver a Biodiversity Net Gain (BNG) of at least 10% for all onshore habitats is welcomed. The habitats to be created at the existing National Grid Bolney substation extension should be subject to agreement/consultation with the District Council at the appropriate time.	The habitat creation and reinstatement measures for the existing National Grid Bolney substation extension works are secured through the design principles in the **Design and Access Statement** **[AS-003]** and the **Outline Landscape and Ecology Management Plan (LEMP)** **[APP-232]**. MSDC will approve the stage specific LEMP for the extension works as per the **Draft Development Consent Order** **[PEPD-009]** requirements. Biodiversity Net Gain is separate to the documents above, and is secured through Requirement 14 of the **Draft Development Consent Order** **[PEPD-009]**.
2.2.6	g) Appropriate mitigation through a detailed Construction Traffic Management Plan, will be essential.	The **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** details the control mechanisms and mitigation that will be employed during the construction phase. Stage-specific CTMPs will be submitted for the approval of the highways authority (WSCC) in consultation with Mid Sussex District Council in accordance with Requirement 24 of the **Draft Development Consent Order** **[PEPD-009]**.
2.2.7	h) MSDC supports the key design principle that the substation extension will be screened by existing vegetation and proposed landscape planting. It is important that these aims are appropriately secured. Recognition should be made of the contribution the site makes to the setting of Coombe House, Cowfold Road and not just Twineham Court Farmhouse, Bob Lane. Consideration should be given to the inclusion of ecological enhancements (such as the new bat boxes at Oakendene substation) within the Terrestrial Ecology Design Principles or the substation extension. MSDC supports the use of the existing access onto Wineham Lane for the construction and operational phases of the substation extension.	The retention of existing screening will be secured through design principles, outlined in **Section 3.3.3** of the **Design and Access Statement (DAS)** **[AS-003]** secured through Requirement 9 of the **Draft Development Consent Order** **[PEPD-009]** and **Outline Code of Construction Practice** **[PEPD-033]** – **Appendix B – Vegetation Retention Plans:** Figure 7.2.1k, Figure 7.2.2h, Figure 7.2.3k secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]** for the existing National Grid Bolney substation. The proposed creation of new habitats and reinstatement of existing vegetation will be secured through the **Outline Landscape and Ecology Management Plan** **[APP-232]** as detailed in Section 3.5 secured through Requirement 12 of the **Draft Development Consent Order** **[PEPD-009]**. The impact on the setting of Coombe House was assessed during the EIA scoping phase and scoped out for further assessment in the Environmental Statement (ES). Table 5-3 in **Appendix 25.7: Settings assessment scoping report, Volume 4** of the ES **[APP-213]** justifies this conclusion . Setting of the asset is defined by the surrounding garden and grounds within which the house and associated garden features are set. No change is anticipated during construction or operation of Proposed Development due to intervening distance, buildings, topography and planting between the asset and the existing National Grid substation at Bolney. The suggestion for consideration of ecological enhancements at the existing National Grid Bolney substation extension works is noted. Any such enhancement would need to be agreed with National Grid Electricity Transmission (NGET) who will continue to be responsible for operation and maintenance of the site. The Applicant will discuss this during engagement with NGET where appropriate and record this in the Statements of Common Ground with NGET and MSDC.
Introduction		
2.2.8	2.1 This correspondence forms Mid Sussex District Council's response to the request for Relevant Representations in respect of the Rampion 2 DCO.	The Applicant has no further comments on this matter at this time.
2.2.9	2.2 The Rampion 2 DCO application was accepted for examination by the Secretary of State on the 7th September. Mid Sussex District Council is a host authority, with proposed works taking place within its boundary that include an	The Applicant has no further comments on this matter at this time.

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	extension to the existing National Grid substation at Bolney and onshore cable installation.	
2.2.10	2.3 The objective of the Rampion 2 project is to make a significant contribution towards the generation of clean sustainable energy supplies. This Council is supportive of the principle of Low Carbon Energy Schemes provided that any adverse local impacts, including cumulative impacts, can be made acceptable.	The acknowledgement that Proposed Development will contribute to generation of clean sustainable energy supplies is welcomed by the Applicant. The Proposed Development will help meet the urgent need for new renewable energy infrastructure in the UK and supporting the achievement of the UK Government's climate change commitments and carbon reduction objectives. The Proposed Development type is recognised as being a critical national priority in the revised NPS EN-1 (Department for Energy Security and Net Zero (DESNZ), 2023a) and NPS EN-3 (DESNZ, 2023b), which came into force in January 2024 and are considered to be relevant to the determination of the DCO Application. This additional generating capacity will contribute towards meeting the urgent need for new energy infrastructure in the UK, provide enhanced energy security, support the economic priorities of the UK Government and, critically, make an important contribution to decarbonisation of the UK economy. The Proposed Development will contribute materially towards meeting the urgent national need for renewable electricity, significantly reducing carbon emissions from energy. The assessment set out in **Chapter 29: Climate change, Volume 2** of the ES **[APP-070]** concludes the Proposed Development has a lifetime GHG emissions saving of 35,901ktCO_2e. The Proposed Development will continue to offset greenhouse gas (GHG) emissions until 2050, and therefore make a positive contribution the UK Government target to reach net zero emissions in 2050. Section 104 of the Planning Act 2008 outlines that the DCO Application must be decided in accordance with the relevant NPS (in this case: NPS EN-1 (DECC, 2011a), NPS EN-3 (DECC, 2011b) and NPS EN-5 (DECC, 2011c) with NPS EN-1 (DESNZ, 2023a), NPS EN-3 (DESNZ, 2023b) and NPS EN-5 (DESNZ, 2023c), that came into force in 2024, relevant considerations in the decision-making process) unless (inter alia) the adverse impacts of a proposal would outweigh its benefits. Section 5.4 of the **Planning Statement** **[APP-036]** summarises the potential environmental, social and economic benefits and the adverse impacts of the Proposed Development drawing on relevant information in line with NPS EN-1 (DECC, 2011a and DESNZ, 2023a). Section 5.5 of the **Planning Statement** **[APP-036]** sets out the planning balance where the potential benefits and impacts of the Proposed Development are weighed up. Although, inevitably, there are adverse impacts associated with the scale and type of infrastructure that forms the Proposed Development, the Applicant considers that the planning balance is firmly in favour of the Proposed Development and the benefits outweigh the adverse impacts.
2.2.11	2.4 The Council is keen to ensure that all appropriate mitigations are implemented to manage any impacts on residents and the local environment.	The **Commitments Register** **[APP-254]** (updated at Deadline 1 submission) presents the mitigation and monitoring commitments. It includes a column for the securing mechanism for each embedded environmental measure and its related commitment reference. This cross-refers to the mechanism (e.g. a requirement in the **Draft Development Consent Order** Schedule 1 Part 3 **[PEPD-009]**). Where there is an accompanying document such as an outline plan submitted with the DCO Application with which works must be undertaken accordance, this is also referred to under the 'Relevant Application Documents' column.
2.2.12	2.5 The Council's Relevant Representations, which are those matters considered to be the key issues to be assessed in the planning balance as far as they affect Mid Sussex, are set out below.	The Applicant has no further comments on this matter at this time.
Landscape		

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2.2.13	3.1 The summary of visual effects of the extension to the existing National Grid Bolney substation at Table 18-43 of Chapter 18: Landscape and visual impact assessment, Volume 2, are noted. Given these findings show a 'major' level of effect from Public Right of Way 1T(PROW), it is important that adequate mitigation is secured here.	**Paragraph 3.3.12** of the **Design and Access Statement** **[AS-003]** includes the design principle that existing vegetation will be protected and retained as indicated on the Indicative Landscape Plan and in accordance with **Appendix B- Vegetation Retention Plans** of the **Outline Code of Construction Practice (CoCP)** **[APP-224]**. The compliance with principles in the Design and Access Statement [AS-003] is secured through Requirement 9 of **Draft Development Consent Order** **[PEPD-009]**. The **Outline CoCP** **[PEPD-033]** is secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. The associated design principle is that the existing National Grid Bolney substation extension will be screened by existing vegetation and proposed landscape planting. As per DCO Requirements 9 and 22, detailed in the **Draft Development Consent Order** **[PEPD-009]**, the works must not commence until details of landscaping of the extension to the existing National Grid substation at Bolney have been submitted to and approved in writing by the relevant planning authority, in this case Mid-Sussex District Council. Work must be carried out in accordance with the approved details.
2.2.14	3.2 When considering the visual impact in respect of long-distance views from within the National Park to the south, the comments of the South Downs National Park Authority should be given appropriate weight.	**The** South Downs National Park (SDNP) is outwith the landscape and visual assessment (LVIA) Study Area for the existing National Grid Bolney substation extension and the related onshore cable corridor in Mid Sussex. Both are also beyond 5km distance as indicated in **Figure 18.4c of** **Chapter 18: Landscape and visual impact assessment – figures (Part 1 of 6), Volume 3** of the ES **[APP-098]**. Despite this some long-distance views, north from the SDNP have been considered as a precaution. No significant visual effects relating to views from the SDNP have been identified in respect of the existing National Grid Bolney substation extension and the related onshore cable corridor in Mid Sussex. **Appendix 18.1: Landscape and visual impact assessment methodology, Volume 4** of the ES **[APP-167]** defines the Study Area used for the landscape and visual assessment. This Study Area is illustrated in Figure 18.1 (**Chapter 18: Landscape and visual impact assessment – figures (Part 1 of 6), Volume 3** of the ES **[APP-098]**) and extends to a 2km buffer beyond the proposed DCO Order Limits. This Study Area has been supported by a number of elevated, long-distance panoramic viewpoint locations within the wider landscape, beyond 2km, as agreed with consultees, in particular the South Downs National Park to demonstrate any visibility at these distances (see paragraph 1.2.13 of **Appendix 18.1: Landscape and visual impact assessment methodology, Volume 4** of the ES **[APP-167]**).
2.2.15	3.3 A comprehensive Arboricultural Impact Assessment and Landscape and Ecological Management Plan (LEMP) will be expected to be submitted to MSDC for consideration once the final designs are known.	An Arboricultural Impact Assessment (AIA) (see **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]**) and an **Outline Landscape and Ecology Management Plan (LEMP)** **[APP-232]** were submitted with the DCO Application. As noted in paragraph 4.7.1 of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** and commitment C-285, a stage specific Arboricultural Method Statement and Tree Protection Plan will be submitted with the stage specific detailed CoCP. This is reflected in the **Draft Development Consent Order** **[PEPD-009]** Requirement 22 (5) (a). As per requirements 12 and 22 of the **Draft Development Consent Order** **[PEPD-009]**, no stage of the authorised project within the onshore DCO Order Limits are to commence until, for that stage, a written Landscape and Ecology Management Plan and associated work programme (which accords with the relevant provisions of the **Outline LEMP** **[APP-232]** and **Outline CoCP** **[PEPD-033]**) has been submitted to and approved by the relevant planning authority. The **Outline LEMP** **[APP-232]** is secured through

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		Requirement 12 of the **Draft Development Consent Order [PEPD-009]**. The **Outline CoCP [PEPD-033]** is secured through Requirement 22 of the **Draft Development Consent Order [PEPD-009]**.
2.2.16	3.4 The final designs should demonstrate a commitment to minimising existing vegetation loss to that which is necessary to facilitate the development, with careful justification expected on any removal of designated 'important hedgerows'.	The design process has followed the mitigation hierarchy, and the final designs will continue to see to minimise existing vegetation loss. **Appendix B – Vegetation Retention Plans** of the **Outline CoCP [PEPD-033]** demonstrates the embedded environmental measures included to minimise the loss of vegetation associated with the Proposed Development. This is reflected in Table 5-5 of the **Outline CoCP [PED-033]**, commitments C-115 and C-220 that commit to reducing habitat loss and landscape and heritage impacts wherever possible, through the Vegetation Retention Plans. This includes minimising loss to 6m for Important Hedgerows wherever possible. DCO requirement 22, detailed in the **Draft Development Consent Order [PEPD-009]**, outlines that no stage of any works landward of Mean Low Water Springs (MLWS) is to commence until a detailed CoCP for the stage has been submitted to and approved by the relevant planning authority, MSDC in this instance. This includes the requirement 22 (5) (b) for a Vegetation Retention Plan.
Historic Environment		
2.2.17	4.1 There are a number of heritage assets within the vicinity of the National Grid substation at Bolney which include the Grade II listed Twineham Court Farmhouse, Bob Lane and the Grade II listed Coombe House, Cowfold Road. The setting of the grade II Royal Oak Public House, which lies on the western side of Wineham Lane within Horsham District, is not considered to be materially affected by the proposals.	The Applicant notes that in Table 5-3 of **Appendix 25.7: Settings assessment scoping report, Volume 4** of the Environmental Statement (ES) **[APP-213]** it was concluded that there would be no change to the setting of the grade II Royal Oak Public House (NHLE 1285777).
2.2.18	4.2 It is considered that the site of the proposed substation extension has some limited positive contribution to the setting of each of these heritage assets. As such it is considered that the height of the Bolney substation extension will have an impact on the currently positive contribution this part of the site makes to the setting of these heritage assets.	The extension of the existing National Grid Bolney substation is not anticipated to be perceptible from Grade II Listed Twineham Court Farmhouse (NHLE 1025579), though it is noted that the extension contributes to the erosion of the asset's wider agricultural setting through associated land take. As described at paragraph 25.10.21 of the Environmental Statement **Chapter 25: Historic environment, Volume 2** of the Environmental Statement (ES) **[APP-066]** this would entail a very low magnitude of change. Grade II listed Coombe House (NHLE 1025752) was scoped out of the assessment as described in Table 5-3 of the **Appendix 25.7: Settings assessment scoping report, Volume 4** of the ES **[APP-213]** as there would be no change to the setting of this asset.
2.2.19	4.3 The proposed development will therefore result in a degree of less than substantial harm in respect of the special interest of these heritage assets. This must be given considerable importance and weight in the planning balance.	The assessment within **Chapter 25: Historic environment, Volume 2** of the Environmental Statement (ES) **[PEPD-020]** of the Environmental Statement (ES) identifies a very low magnitude of change, resulting in a Minor adverse residual effect during the construction and operation and maintenance phases of the onshore cable and extension of the existing National Grid Bolney substation, which would be not significant. This will be at the lower end of less than substantial harm to a designated heritage asset. Effects during the construction phase will be temporary. Paragraph 5.9.30 of NPS EN-1 notes that less than substantial harm to the significance of a designated heritage asset should be weighed against the public benefit of a proposal. The **Planning Statement**

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		[APP-036] states "*It is considered that the substantial public benefits of the Proposed Development outweigh the residual harm to the heritage assets outlined in the ES.*
2.2.20	4.4 In terms of mitigation, consideration should be given to the potential for further planting around the site, to mitigate any negative impact on views from the PROW to the east, and Bob Lane to the south.	See response above to Landscape representations in **references 2.2.13 to 2.2.16**.
Water Environment		
2.2.21	5.1 The site where it is located within Mid Sussex is in flood zone 1 and is at low fluvial flood risk (risk of flooding from Main Rivers). The site is shown to be at very low, low, medium and high surface water flood risk (comparable to flood zones 1, 2, 3a, and 3b). 5.2 This flooding appears to be linked to existing field boundary ditches/watercourses associated with agricultural land use. Though some areas within the Bolney substation site may be at an elevated risk of surface water flooding.	Surface water flood risk to the existing National Grid Bolney substation extension site area is detailed in Section 5.3.14 of **Appendix 26.2: Flood Risk Assessment (FRA), Volume 4** of the ES **[APP-216]**. The paragraph states that: "*There are no noted surface water flowpaths intersecting the proposed extension works at the existing National Grid Bolney substation. An area of mapped isolated flood risk relates to a historic pond that was removed in association with previous extension works. The overall run-on to the extension area is therefore negligible.*" The Environment Agency Risk of Flooding from Surface Water (RoFSW) mapping (Environment Agency, 2023b) at this specific location is not based on up-to-date topographic information and is therefore considered to be inaccurate by the Applicant. Based on review of the RoFSW mapped area of elevated risk within the historic pond, this is related to ponded water 'in-situ' rather than any significant surface water flowpath running onto the area. If updated modelling was undertaken based on the latest topographic layout of the National Grid site, it is envisaged that no areas of risk would be mapped across the site. In addition, it was stated in a meeting with WSCC and MSDC on 01 April 2022 that there was no record of historic flooding at the existing National Grid Bolney substation site. Minutes of this meeting are provided in Appendix A of the **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]**. On the basis of the above, the Applicant considers there to be a negligible risk of flooding from surface water towards the existing National Grid Bolney substation extension area.
2.2.22	5.3 Mid Sussex District Council's records do not contain records of the site flooding. Our records also contain no records of flooding within the area immediately surrounding the site. However, Mid Sussex District Council's records are not complete, and flooding may have occurred which is not recorded. A site having never flooded in the past does not mean it won't flood in the future.	The Applicant agrees with Mid Sussex District Council's comment with respect to there being no records of site flooding at the existing National Grid Bolney substation site which is consistent with the feedback recorded with MSDC and Horsham District Council (HDC) at a meeting on 01 April 2022. The embedded flood risk management measures presented within the **Appendix 26.2: Flood Risk Assessment (FRA), Volume 4** of the ES **[APP-216]** and **Outline Operational Drainage Plan** **[APP-223]** will ensure that the Proposed Development will not be subject to an unacceptable level of flood risk throughout its lifetime (and incorporating the anticipated impacts of climate change), nor will it increase flood risk elsewhere. This is in line with the overall conclusion presented in Section 10.2 of **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]**. The Operational Drainage Plan will be produced at the post-DCO award stage, and must accord with the **Outline Operational Drainage Plan** **[APP-223]** as per draft DCO Requirement 18 of the **Draft Development Consent Order** **[PEPD-009]**.
2.2.23	5.4 Any above ground structures that create an impermeable area will require some drainage so as not to create or exacerbate flood risk. Any surface water drainage will need to be designed to meet the latest national and local drainage policies. The drainage system will need to consider climate change, the allowances for which should be based on the latest climate change guidance from the Environment Agency.	Climate change allowances are discussed in Section 3.2 of the **Outline Operational Drainage Plan** **[APP-223]**, which are based on current Environment Agency guidance (Environment Agency, 2023a). As set out in the Environment Agency's climate change allowances for flood risk assessments (Environment Agency 2023a) and Planning Practice Guidance (Ministry of Housing, Communities and Local Government, 2022), for developments with lifetimes between 2061 and 2100 developments should

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		be designed for the central allowance in the one percent Annual Exceedance Probability (AEP) event so that there is no increase in flooding elsewhere and the development itself should be safe from surface water flooding. The design requirement for attenuation volume storage is therefore deemed to be the one percent AEP plus 25 percent climate change allowance for increase in peak rainfall intensity. This is secured via the **Outline Operational Drainage Plan [APP-223]** as set out in paragraphs 3.2.2 and 3.2.3 and secured via Requirement 18 of the **Draft Development Consent Order [PEPD-009]**. The climate change allowances will be reviewed and confirmed prior to undertaking detailed design.
2.2.24	5.5 The BGS infiltration potential map shows the site to be in an area with low infiltration potential. Therefore, the use of infiltration drainage such as permeable paving or soakaways is unlikely to be possible on site. To ensure the drainage hierarchy is followed this will need to be confirmed through infiltration testing on site as part of detailed drainage design.	The **Operational Drainage Plan [APP-223]** paragraph 3.2.15 outlines that "Given the presence of clay and the poorly drained soils, discharge of surface water to the ground is not considered feasible. If deemed necessary by the Lead Local Flood Authority (LLFA), soakage testing could be undertaken post-granting of DCO consent to demonstrate this, but this is considered unnecessary if ground investigation undertaken to support the wider detailed design of the existing National Grid Bolney substation extension indicates ground conditions unsuitable for infiltration." The **Outline Operational Drainage Plan [APP-223]** is secured via Requirement 18 of the **Draft Development Consent Order [PEPD-009]**.
2.2.25	5.6 To ensure the final surface water drainage design meets with the latest design requirements the applicant is advised to confirm the design parameters required in relation to climate change etc prior to undertaking detailed design.	All design parameters (including climate change allowances) will be reviewed and confirmed prior to undertaking detailed design. **Reference 2.2.23** (above) outlines relevant climate change allowances for rainfall intensity.
Air Quality and Noise		
2.2.26	6.1 The issues are construction noise & dust and, in respect of the substation extension at Bolney, operational noise. Regarding the latter, it is noted that the applicant's submissions state that "the operational plant of the existing National Grid Bolney substation extension (GIS or AIS) will not be audible outside of the extension site boundary." 6.2 The GIS infrastructure is expected to be minimal as the equipment will be housed within a building. Although not enclosed within a building, the proposed AIS infrastructure does not include the larger noise generating equipment (transformers, shunt reactors or condenser) associated with onshore substation infrastructure and therefore would not be expected to increase noise from Bolney substation at receptor locations. 6.3 Any changes to either of these proposals will require further consideration. 6.4 Measures should be put in place to ensure that noise from the substation extension is not increased at the nearest receptors. Mitigation measures should also include comprehensive management plans to minimise the impacts of construction dust and noise.	The Applicant acknowledges relevant representation from Mid Sussex District Council and notes that any changes to the proposals would require further consideration in discussion with key stakeholders. The air quality and noise effects related to the existing National Grid Bolney substation extension are assessed within **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** and **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]**. The **Outline CoCP [PEPD-033]** includes an embedded environmental measure to produce Dust Management Plans for the areas within the proposed DCO Order Limits that are associated with medium dust risk. The **Outline CoCP [PEPD-033]** is underpinned by commitment C-24 of the **Commitment Register [APP-254]** (updated at Deadline 1 submission) which outlines that '*Best practice air quality management measures will be applied as described in Institute of Air Quality Management (IAQM) (2016) guidance on the Assessment of Dust from Demolition and Construction 2016, version 1.1*'. The **Outline CoCP [PEPD-033]** is secured through Requirement 22 of the **Draft Development Consent Order (DCO) [PEPD-009]**. Construction noise at the existing National Grid Bolney substation will be mitigated and managed through the application of the stage specific Code of Construction Practice in accordance with the **Outline Code of Construction Practice (CoCP) [PEPD-033**] which will be submitted to and approved by the relevant planning authority (Requirement 22 within the **Draft Development Consent Order [PEPD-009]**).Commitment C-263 in the **Commitments Register [APP-254]** (updated at Deadline 1 submission) states that during detailed design the appointed contractor will review the construction noise assessments and where any significant deviation from the initial sound level predictions is identified, such that levels in excess of the BS5228-1 thresholds of significance are likely, the Noise and Vibration Management Plan

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		(NVMP) secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]** shall be updated or a Section 61 application will be made to the relevant Local Planning Authority. Table 21-19 within **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]** includes the maximum assessment assumption that operational plant of the existing National Grid Bolney substation extension will not be audible outside of the extension site boundary for the operational phase; *'GIS infrastructure is expected to be minimal as the equipment will be housed within a building. Although not enclosed within a building, the proposed AIS infrastructure does not include the larger noise generating equipment (transformers, shunt reactors or condenser) associated with onshore substation infrastructure and therefore would not be expected to increase noise from Bolney substation at receptor locations.'* Therefore, no additional measures to control operational noise at the existing National Grid Bolney substation are proposed. The **Outline CoCP** **[PEPD-033]** includes an embedded environmental measure to produce Dust Management Plans for the areas within the proposed DCO Order Limits that are associated with medium dust risk. The **Outline CoCP** **[PEPD-033]** is underpinned by commitment C-24 of the **Commitment Register** **[APP-254]** (updated at Deadline 1 submission) which outlines that '*Best practice air quality management measures will be applied as described in Institute of Air Quality Management (IAQM) (2016) guidance on the Assessment of Dust from Demolition and Construction 2016, version 1.1*'. The **Outline CoCP** **[PEPD-033]** is secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**.
2.2.27	6.5 Regarding construction noise, the applicant has set out in their submissions (Outline Code of Construction Practice for example) that they intend to operate within the following core working hours: "07:00 to 19:00 hours Monday to Friday; and 08:00 to 13:00 hours on Saturday." 6.6 There is no concern raised around the specific activities or circumstances highlighted by the applicant that may occur outside of these hours. There is, however, concern around the impact that these working hours, will have on the residential amenity of neighbouring residents who live in close proximity to the construction areas, and specifically, a 07:00 start time on weekdays and 08:00 on Saturdays. 6.7 The strong preference for MSDC would be for the applicant to amend their proposed core construction hours to more closely reflect those that are applied to other development within the district by the Council. Consideration should therefore be given to following proposed core construction hours being applied to the development to mitigate the impact of construction noise on residents: "08:00 to 19:00 hours Monday to Friday; and 09:00 to 13:00 hours on Saturday."	Working hours are stated in Section 4 of **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** and are outlined in Section 4.4 of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**. Following receipt of Relevant Representations and information shared at Issue Specific Hearing 1, C-22 within the **Commitments Register** **[APP-254]** has been updated at the Deadline 1 submission to the following: **'***Core working hours for construction of the onshore components will be 08:00 to 18:00 Monday to Friday, and 08:00 to 13:00 on Saturdays, apart from specific circumstances that are set out in the Outline COCP, where extended and continuous periods of construction are required.* *Prior to and following the core working hours Monday to Friday, a 'shoulder hour' for mobilisation and shut down will be applied (07:00 to 08:00 and 18:00 to 19:00). The activities permitted during the shoulder hours include staff arrivals and departures, briefings and toolbox talks, deliveries to site and unloading, and activities including site and safety inspections and plant maintenance. Such activities shall not include use of heavy plant or activity resulting in impacts, ground breaking or earthworks.'* This has been updated in the **Outline Construction Traffic Management Plan** **[PEPD-035a]** for the Deadline 1 submission and will be updated in the **Outline Code of Construction Practice** **[PEPD-033]** for the next submission of this document.

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		As outlined in the **Outline Code of Construction Practice** **[PEPD-033]**, no activity outside these hours (including Sundays, public holidays, or bank holidays) will take place apart from under the following circumstances: • Where continuous periods (up to 24 hours, 7 days per week) of construction work are required for HDD (as HDD is a continuous activity that cannot be paused once started); • for other works requiring extended working hours such as concrete pouring which will require the relevant planning authority to be notified at least 72 hours in advance; • or the delivery of abnormal loads to the connection works, which may cause congestion on the local road network, and will require the relevant highway authority to be notified at least 72 hours in advance; or • as otherwise agreed in writing with the relevant planning authority.
Biodiversity		
2.2.28	7.1 The mitigation for individual ecological features/impacts must be adequately secured. 7.2 The applicant's commitment to deliver a Biodiversity Net Gain (BNG) of at least 10% for all onshore habitats subject to permanent or temporary losses as a result of the construction and operation of the development is welcomed. 7.3 The habitats to be created at the existing National Grid Bolney substation extension include the planting of additional trees and this element of the proposals should be subject to agreement/consultation with the District Council at the appropriate time.	The mitigation for individual ecological features / impacts will be adequately secured. The **Draft Development Consent Order (DCO)** **[PEPD-009]** has Requirements 12, 13,14 and 22 securing mitigation, compensation and biodiversity net gain (BNG). Requirement 12 and 22 of the **Draft DCO** **[PEPD-009]** ensures that a Landscape and Ecological Management Plan and a Code of Construction Practice are provided for agreement with the relevant planning authority and Natural England. Requirement 13 of the **Draft DCO** **[PEPD-009]** ensures that the Landscape and Ecological Management Plan is delivered as agreed, whilst Requirement 14 of the **Draft DCO** **[PEPD-009]** secures the agreement and implementation of a BNG strategy.
Traffic and Transport		
2.2.29	8.1 The environmental effects of the construction traffic impact are a key consideration and the views of West Sussex County Council, as the local highways authority, and National Highways should be carefully considered.	The environmental effects of the construction traffic have been assessed in **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES **(Reference: 6.2.32)** submitted at Deadline 1. The Applicant has regularly engaged with West Sussex County Council and National Highways during the pre-application stage and will continue to do so during the Examination.
2.2.30	8.2 Appropriate mitigation through a detailed Construction Traffic Management Plan, will be essential.	An **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** has been produced as part of the Development Consent Order (DCO) Application which includes mitigation measures to limit the impacts of construction traffic associated with the Proposed Development. Stage specific CTMPs will be produced following the grant of the DCO and prior to construction of that stage of works which will follow the controls defined within the **Outline CTMP** **[PEPD-035a]** secured through Requirement 24 of the **Draft Development Consent Order** **[PEPD-009]**. These will be agreed with the Local Highway Authority (WSCC) in consultation with Mid Sussex District Council within its area or the relevant local planning authority.
2.2.31	8.3 Effective mitigation is needed for the impacts on recreational users of the PROW network, especially during the construction period.	The **Outline Public Right of Way Management Plan (PRoWMP)** **[APP-230]** outlines the management measures for all Public Rights of Way affected during the construction phase of the onshore elements of the Proposed Development.

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		The provision of a stage specific Public Rights of Way Management Plan to be submitted to and approved by the highway authority in consultation with the relevant planning authority is secured via Requirement 20 in the **Draft Development Consent Order** **[PEPD-009]**.
Design Principles – Existing National Grid Bolney Substation extension		
2.2.32	9.1 The applicant states that one of the key design principles is the intention that the substation extension will be screened by existing vegetation and proposed landscape planting. MSDC supports this key design principle, and it is important that the aims of it are appropriately secured.	See response above to **reference 2.2.7**.
2.2.33	9.2 Under the Historic Environment Design Principles, a recognition should be made of the contribution the site makes to the setting of Coombe House, Cowfold Road and not just Twineham Court Farmhouse, Bob Lane.	See response above to **reference 2.2.7**.
2.2.34	9.3 Consideration should be given to the inclusion of ecological enhancements (such as the new bat boxes at Oakendene substation) within the Terrestrial Ecology Design Principles for the substation extension.	See response above to **reference 2.2.7**.
2.2.35	9.4 MSDC supports the use of the existing access onto Wineham Lane for the construction and operational phases of the substation extension rather than have a new access directly onto Bob Lane.	The Applicant welcomes Mid Sussex District Council's support on the use of the existing access onto Wineham Lane for the construction and operational phases of the existing National Grid Bolney substation extension.
Draft Development Consent Order		
2.2.36	10.1 There are some aspects of the draft development consent order that may need refinement. The following comments are not therefore exhaustive although any additional comments will be shared with the applicant and set out in the Local Impact Report.	Noted, the Applicant has no further comments on this matter at this time.
2.2.37	10.2 Part 3, Requirements, 9 (Detailed design approval – extension to National Grid substation): Cross reference is made with the ground level definitions from the DAS but confirmation of the need to provide the existing ground levels should made explicit here or within the DAS.	Reference to 'existing and proposed ground levels' has been added at point (c), requirements 8 and 9 of Part 3 of Schedule 1 to the **Draft Development Consent Order** **[PEPD-009]** submitted at the Pre-Examination Procedural Deadline.
2.2.38	10.3 Part 3, Requirements,12 (Provision of Landscaping): Reference should be made to the need to submit a comprehensive Arboricultural Impact Assessment as part of the landscaping.	An Arboricultural Impact Assessment (AIA) has been submitted with the DCO Application (see **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]**). Section 4.7 of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** includes a commitment (C-285) to produce an Arboricultural Method Statement (AMS) and Tree Protection Plan (TPP) based on the detailed design. The provision of the AMS and TPP is secured as part of the CoCP secured in the **Draft Development Consent Order** **[PEPD-009]** Requirement 22 and shall be provided as part of the stage specific detailed CoCP prior to the commencement of the relevant stage of works.
2.2.39	10.4 Part 3, Requirements, 22 (5) (Code of Construction Practice): Should reference be made here to the 'temporary construction compounds' and 'temporary soil storage areas' identified as Works No 10 and 11 respectively?	The embedded environmental measures related to onshore temporary construction activities are included in the **Outline Code of Construction Practice (CoCP)** **[APP-224]**, including the construction compounds and soil storage. As per **Draft Development Consent Order** **[PEPD-009]** Requirement 22, the detailed CoCP must accord with the **Outline CoCP** **[APP-224]** and will cover such activities where applicable in the stage of works.

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2.2.40	10.5 Part 3, Requirements, 32 (Travel Plan): The wording appears to suggest that the OTP could be implemented at any time during the lifetime of the development. It is considered the timescale for implementation should be made more explicit. For example "to be implemented at the time the project becomes operational and retained for the operational lifetime of the project."	The word 'during' has been changed to 'throughout' in Requirement 32 in the **Draft Development Consent Order [PEPD-009]** submitted at the Pre-Examination Procedural Deadline A on 16 January 2024. This change has also been made to Requirements 29, 30, 31 and 33
Closing Comments		
2.2.41	11.1 Without prejudice to the above representations Mid Sussex District Council will, at the required time, produce a Local Impact Report (LiR) which will set out its position in full on the above and any other relevant matters. 11.2 In the meantime, Mid Sussex District Council will continue to engage with the applicant regarding the DCO.	The Applicant has no further comments on this matter at this time.

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Table 2-3 Applicant's Response to West Sussex County Council

Ref	Relevant representation comment	Applicant's response
2.3.1	**2 Overview** 2.1 WSCC acknowledges the target set by the UK Government of delivering over a third of electricity from offshore wind by 2030 and, therefore, it is supportive of the principle of offshore wind development in helping to tackle the challenges faced by climate change. WSCC recognises the national importance of having a balanced supply of electrical generation, including increasing renewable energy supplies from offshore turbines in helping decarbonise the UK's energy sector. Critical national infrastructure must not only deliver the Government's energy objectives but also deliver sustainable societal and economic impacts in the regions that are hosting them. Therefore, the Project needs to be achieved without significant adverse effects on the environment, local communities, and economy of West Sussex.	West Sussex County Council's support to the principle of offshore win development in helping to tackle challenges faced by climate change is welcomed by the Applicant. The Proposed Development will help meet the urgent need for new renewable energy infrastructure in the UK and supporting the achievement of the UK Government's climate change commitments and carbon reduction objectives. The Proposed Development type is recognised as being a critical national priority in the revised NPS EN-1 (Department for Energy Security and Net Zero (DESNZ), 2023a) and NPS EN-3 (DESNZ, 2023b), which came into force in January 2024 and are considered to be relevant to the determination of the DCO Application. This additional generating capacity will contribute towards meeting the urgent need for new energy infrastructure in the UK, provide enhanced energy security, support the economic priorities of the UK Government and, critically, make an important contribution to decarbonisation of the UK economy. The Proposed Development will contribute materially towards meeting the urgent national need for renewable electricity, significantly reducing carbon emissions from energy. The assessment set out in **Chapter 29: Climate change, Volume 2** of the ES **[APP-070]** concludes the Proposed Development has a lifetime greenhouse gas (GHG) emissions saving of 35,901 kilotonne carbon dioxide equivalent ($ktCO_2e$). The Proposed Development will continue to offset greenhouse gas (GHG) emissions until 2050, and therefore make a positive contribution the UK Government target to reach net zero emissions in 2050. Section 104 of the Planning Act 2008 outlines that the DCO Application must be decided in accordance with the relevant NPS (in this case: NPS EN-1 (DECC, 2011a), NPS EN-3 (DECC, 2011b) and NPS EN-5 (DECC, 2011c) with NPS EN-1 (DESNZ, 2023a), NPS EN-3 (DESNZ, 2023b) and NPS EN-5 (DESNZ, 2023c), that came into force in 2024, relevant considerations in the decision-making process) unless (inter alia) the adverse impacts of a proposal would outweigh its benefits. Section 5.4 of the **Planning Statement [APP-036]** summarises the potential environmental, social and economic benefits and the adverse impacts of the Proposed Development drawing on relevant information in line with NPS EN-1 (DECC, 2011a and DESNZ, 2023a). Section 5.5 of the **Planning Statement [APP-036]** sets out the planning balance where the potential benefits and impacts of the Proposed Development are weighed up. Although, inevitably, there are adverse impacts associated with the scale and type of infrastructure that forms the Proposed Development, the Applicant considers that the planning balance is firmly in favour of the Proposed Development and the benefits outweigh the adverse impacts.
2.3.2.	2.2 The Applicant has identified that the offshore infrastructure associated with Rampion 2 will have potentially significant adverse impacts on the seascape, coastal landscapes, and people who live, work and visit West Sussex. The onshore infrastructure at the substation site also has the potential to negatively impact on a number of environmentally sensitive areas and features, and on residential amenity during the lifetime of the Project.	The likely significant environmental effects of the Proposed Development have been assessed in **Chapter 6: Coastal processes** to **Chapter 30 Inter-related effects, Volume 2** of the Environmental Statement (ES) **[APP-047** to **APP-071]**. Wherever practicable, likely significant adverse effects have been avoided or minimised through embedded environmental measures in the design of the Proposed Development, taking into account the findings of the ES, consultation with stakeholders and national and local policy requirements. The ES has identified significant seascape, landscape and visual effects for areas of the South Downs National Park (SDNP), West Sussex, East Sussex, and the City of Brighton & Hove (see **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**). A number of measures are embedded as part of the design of the Proposed Development to avoid, minimise or reduce any significant environmental effects on seascape, landscape and visual receptors, as far as possible. Although there are some significant effects on views and perceived special quality of the Chichester Harbour Area of Outstanding Natural Beauty (CHAONB) designation, no effects are of such magnitude or significant enough, on their own or cumulatively to compromise the statutory purposes of the designation.

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		The likely significant onshore landscape and visual impacts linked to the Proposed Development are limited to the construction phase, and early in the operational phase, and impacts will be temporary (see **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**). Embedded measures aim to minimise effects on the special qualities of the SDNP through careful design consideration and planning in respect of the construction process and activity, taking account of relevant policy and guidance. The assessment within **Chapter 25: Historic environment, Volume 2** of the ES **[APP-066]** has found some significant effects on the setting of designated assets in the construction phase along the onshore cable corridor. These effects will be temporary. There is also potential to encounter archaeological remains. In line with the requirements of National Policy Statement (NPS) EN-1 (Department of Energy and Climate Change (DECC), 2011) and mitigation within Section 5.9 the revised 2023 EN-1 (Department for Energy Security and Net Zero (DESNZ), 2023a), archaeology at risk of loss or disturbance would be recorded before any loss occurs. This recording would be provided for in a WSI (site-specific, as described in the **Outline Onshore Written Scheme of Investigation** [**APP-231]**). There are some significant effects on recreational users of a very limited number of public right of way (PRoW) and on two inshore and offshore receptors (recreational fishing and scuba diving) in the construction phase (see **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]**). These effects will be temporary and can be moderated through the implementation of environmental measures. The wider benefits of Rampion 2 and the need for offshore wind energy must be weighed against the adverse impacts that have been identified as well as any local issues and concerns. This balancing should also take into account national and international policies and obligations that seek to tackle climate change and achieve net zero carbon emissions in 2050.
2.3.3	2.3 Therefore, although the Rampion 2 Offshore Wind Farm is supported in principle by WSCC (because it would make a significant contribution to the provision of renewable energy), there are number of matters of significant concern that have not been satisfactorily addressed to date by the Applicant. These are: i. Concerns about the size and layout of the offshore wind turbines and the significant adverse effect on views out to sea; ii. The significant scale of the onshore substation creating an adverse effect on the existing landscape and surrounding local communities; iii. The anticipated scale of historic environment impacts, which could cause an unacceptably high degree of harm to heritage assets, including those of national significance; iv. Concerns about the downplaying of temporary impacts of cable route construction, without securing construction phasing and timescales within the dDCO; v. The impacts on ecological receptors, including key species and habitats, and the needs for ecological enhancement (including Biodiversity Net Gain);	The Proposed Development will contribute materially towards meeting the urgent national need for renewable electricity generation, significantly reducing carbon emissions from energy. The Applicant's response to these points is set out in more detail in the subsequent **references 2.3.4** to **2.3.56** below.

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	vi. Concerns about impacts on the West Sussex transport network during construction and the level of mitigation proposed through the Outline Construction Traffic Management Plan (OCTMP); vii. The limited mitigation measures proposed to safeguard minerals, which require strengthening; viii. The limited socio-economic benefits to West Sussex (including employment opportunities, supply chain expenditure, and the creation of a Community Benefit Fund), the limited scope of the Outline Skills and Employment Strategy (OSES), and potential adverse impacts on tourism; ix. Requirement for further environmental assessment and justification of assumptions across a number of technical elements, as highlighted within this representation; x. Ensuring the commitments and mitigation measures to reduce the adverse effects presented are secured sufficiently with the control documents and dDCO, including defining the role of WSCC in the discharge of requirements process; and xi. The limited scope and scale of the draft section 106 principles presented by the Applicant, which indicate a disappointing level of commitment to West Sussex. The concerns are reflected in the gap in expectations that currently exist between the Applicant and WSCC.	
2.3.4	2.4 As part of the DCO process, WSCC wishes to engage proactively with the Applicant to reduce the areas of concern and seek to achieve the best possible outcomes for the local communities and other sensitive receptors that would be most affected by the construction and long-term operational impacts of Rampion 2. This work will contribute to further refinement of the PADS, as well as informing the drafting of Statements of Common Ground (SoCG), Written Representations, and any response to the ExA's questions during the forthcoming examination. WSCC also recognises the importance of liaising meaningfully on the detail of the s106 Agreement. of environmentally sensitive areas and features, and on residential amenity during the lifetime of the Project.	The Applicant welcome's WSCC's wish to engage proactively to reduce areas of concern and will work towards a Statement of Common Ground.
2.3.5	**Assessment of Alternatives** 3.3 The site selection process for identifying the least impactful option for project infrastructure should have been presented to stakeholders in a robust, transparent and detailed manner, ensuring that all environmental and social criteria had been taken into account. WSCC raises concerns that this has not been sufficiently demonstrated through the application documentation for the above ground infrastructure and the areas of continuous construction presence. Key concerns are as follows: i. Justification for the choice of Oakendene as the onshore substation location - a critical part of the EIA process is to review	**Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** describes the alternatives studied by the Applicant and a comparison of their environmental effects across the project as a whole. This includes the alternatives considered and consulted on prior to the DCO Application. As described in **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**, the Proposed Development has been developed through a multi-disciplinary design process including environment, engineering, landowner and cost considerations. With regard identifying the "least impactful option" or the "most environmentally acceptable location" as noted in this Relevant Representation, the Applicant has sought to avoid, reduce or minimise the effects through the design process and also by identifying and securing embedded environmental measures. It is acknowledged that some residual effects remain.

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	the alternatives considered during the evolution of the Project and to set out why they have been discarded in favour of preferred sites. WSCC has concerns that the limited evidence in the DCO application documents does not allow this process to be understood fully, especially with the Applicant stating there was only a marginal preference for the Oakendene site.	Section 3.6 of **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** provides the information on the onshore substation site selection process. Section 3.6 describes the site selection process and the reasons for other sites being discounted based on the multi-disciplinary factors identified in the paragraph above. The selection of Oakendene is clearly stated as favourable for engineering, cost and landowner considerations in paragraphs 3.6.23 to 3.6.25 of **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**. Significant weight was also given to the environmental constraints and related policy in the overall balance of the decision. This Applicant has also developed further embedded environmental measures that have been presented in the application including the design principles in the **Design and Access Statement [AS-003]**, **Outline Landscape and Ecology Management Plan [APP-232]** and **Outline Operational Drainage Plan [APP-223]**. The Applicant has provided further information on the decision to select the Oakendene site for the onshore substation (see Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1 (Document Reference: 8.25)** (submitted at Deadline 1).
2.3.6	ii. Justification for the locations of construction compounds - five main compound locations will be required along the onshore cable corridor and substation site, and whilst they are termed 'temporary', this would still represent approximately three years and six months of continuous construction presence. WSCC has concerns about the proximity of these compounds to sensitive receptors and therefore needs evidence that they have been sited in the most environmentally acceptable location.	The Applicant requires three temporary construction compounds as bases to support the construction of the onshore cable corridor to reduce the distance travelled between the compounds and cable work sites, and another two to support substation works. This includes for logistics, preparing materials, equipment maintenance, project management and to support mitigation works. Compounds must have sufficient space for the required purposes, be close to major roads, be outside of protected areas, be near the cable corridor and key construction activities, and be on level clear ground. Four sites were identified near Washington that could serve as the middle compound, and three were shown in the first statutory consultation in 2021. Considering consultation feedback as well as the technical and environmental appraisal of each compound site, the site on The Pike near Washington Village was selected. This compound site is: • Sufficiently large (3.9ha) for the required use; • Close to the A24 dual carriageway, reducing the need for construction traffic to traverse villages and rural roads; • Outside of the South Downs National Park and flood zones; • Directly on the onshore cable construction corridor; • Close to the site of two trenchless crossings (including the long crossing under the A24 and Washington playing fields) allowing for construction efficiencies, reducing overall impact; and • Level with limited vegetation within the site, but well screened around the perimeter. The Applicant considered an alternative compound site at Climping to the west of Church Lane prior to consultation but this was rejected due to the area overlapping with an approved Outline Application CM/1/17/OUT for the erection of up to 300 dwellings and ancillary development (for more information please see Table 3-1 in **Appendix 5.4 Cumulative effects assessment, Volume 4** of the ES **[APP-128]**). The temporary construction compounds at the onshore substation site and the National Grid Bolney substation extension works are required to support the construction of these elements of the works. The Environmental Statement has assessed the effects of each compound for during construction. Though impacts will arise, there are no significant effects arising from noise, dust, ecology, Public Rights of Way and traffic impacts when considering the embedded environmental measures secured in the **Outline Code of Construction Practice (CoCP) [PEPD-033]**, the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]** and the **Outline Public Rights of Way Management Plan (PRoWMP) [APP-230]**. The

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		Applicant acknowledges that significant landscape and visual effects associated with the presence of the compound however these are temporary and reversible when the commitment to reinstatement in the **Outline Landscape and Ecology Management Plan (LEMP)** **[APP-232]** is considered. It is noted that each of the above plans will be subject to submission of stage specific details for approval by the relevant authority including West Sussex County Council (WSCC) for the CTMP and PRoWMP and the relevant planning authority for the CoCP and LEMP. This is as per the **Draft Development Consent Order** **[PEPD-009]** Requirements 24, 20, 22 and 12 respectively. See **Environmental Statement, Volume 2** of the Environmental Statement (ES): • **Chapter 17: Socio-economics** **[APP-058]**; • **Chapter 18: Landscape and visual impact** **[APP-059]**; • **Chapter 19: Air quality** **[APP-060]**; • **Chapter 21: Noise and vibration** **[PEPD-018]**; • **Chapter 22: Terrestrial ecology and nature conservation** **[APP-063]**; and • **Chapter 23: Transport** **[APP-064]** for further information on the assessment of effects.
2.3.7	iii. Justification for Longer Alternative Cable Route Option 1d (LACR-01d) – the pre-application consultation undertaken by the Applicant for a number of onshore cable route options (and the subsequent mitigation through avoidance this resulted in) is acknowledged by WSCC. However, WSCC has a significant concern about option LACR-01d taken forward by the Applicant. The archaeological sensitivity of this section of the route is exceptionally high. LACR-01d crosses an area of the South Downs that forms part of an incredibly rich and complex multi-period prehistoric landscape of national significance. The assessment of alternatives does not provide sufficient detail as to the weighting given to these sensitivities within the site selection process.	Paragraphs 3.4.55 to 3.4.67 of **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** provide a detailed description of the justification for the onshore cable route selection in this location. This includes comparison of alternatives to the selected onshore cable route. As presented in paragraphs 3.4.63 and 3.4.66 of **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** and the bullet points that follow these paragraphs, each of the alternative routes presented pass through Archaeological Notification Areas (ANAs) with potential or known archaeological remains of high heritage significance. The high potential for archaeological remains of high heritage significance in the South Downs National Park (SDNP) was given substantial weight (based on their potential and known archaeological significance) in the decision making process, in accordance with the protection afforded by policy in NPS EN-1 (2011) and the revised 2023 NPS EN-1 (Department for Energy Security and Net Zero, 2023a). Based on the available historic environment evidence, when comparing the environmental effects or policy outcomes during the decision making process, there was no material difference for each onshore cable route for archaeology.
2.3.8	**Project Description and Construction Phase Detail** 3.4 It is essential to ensure that key design and construction decisions do not result in unacceptable or adverse impacts on residents, visitors or businesses within West Sussex over the four-year onshore construction period. Key concerns are as follows: i. Given the duration of the onshore construction programme will be up to four years, there is a lack of construction phasing information, which should be presented more clearly to enable local communities and WSCC to understand if the impacts have been appropriately addressed and mitigated through the outline control documents. The proposed Construction and Communications Plan (CCP) as part of the Outline Code of Construction Practice (OCOCP) (APP-224), as very broadly	Section 4.7 of **Chapter 4: The Proposed Development, Volume 2** of the Environmental Statement (ES **[APP-045]** provides a summary of the indicative construction programme that has informed the assessments within the ES. Schedule 1, part 3, requirement 10 of the **Draft Development Consent Order** **[PEPD-009]** secures that the detail of the stages (equivalent to phases) of works are to be submitted and approved by the relevant planning authorities.

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	outlined, is welcomed and should build upon similar arrangements adopted for Rampion 1, and experience gained and lessons learnt. ii. There is limited, if any detail on how the commitment (C-19) within the Commitments Register (APP-254) to construct the onshore cables in discrete sections, will be secured and the type of information that will be provided on detailed phasing, sequencing of construction activities. Given assessments are predicated on the durations of construction activities, it is essential to understand the scope of the information to be provided and timescales of activities no longer than that assessed as a worst case.	
2.3.9	iii. The detailed design for trenchless crossings (HDD) will be confirmed at the detailed design stage as part of Construction Method Statements (CMS). This leaves significant uncertainty as the potential for impacts. The Outline CMS (OCMS) (APP-255) suggests for any changes to trenchless crossings (currently identified as preferred options), confirmation will be provided that there are no new or materially different environmental effects arising compared to those assessed in the ES. However, no methodology as to how this will be assessed/established has been provided and requires clarification.	The **Outline Construction Method Statement** **[APP-255]** provides further information regarding the detailed design of the trenchless crossings in Section 3.4 and the further information required to inform this (e.g. ground investigation). The detailed design of a trenchless crossing will be undertaken within the established parameters assessed in the Environmental Statement (ES) as detailed in paragraph 4.5.27 of **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** and secured in the **Draft Development Consent Orde r[PEPD-009]** through Requirement 23 (g) to be approved by the relevant planning authority. Any assessment required at the detailed design stage would be undertaken in accordance with the established methodologies outlined in the ES.
2.3.10	iv. There is a concern about the lack of detail and clarity in the CoCP and Outline Construction Traffic Management Plan (OCTMP) (APP-228). This includes in relation to some of the proposed measures to reduce the construction impact.	The Applicant will continue to engage with West Sussex County Council (WSCC) to seek discuss matters with regards the measures identified in the **Outline Code of Construction Practice** **[PEPD-033]** and the **Outline Construction Traffic Management Plan** **[PEPD-035a]**. This will be recorded during the development of the Statement of Common Ground (SoCG) with WSCC. Stage specific CoCPs and CTMPs will be required to be submitted and approved before the commencement of a stage as secured by Requirements 22 and 24 respectively of the **Draft Development Consent Order** **[PEPD-009]**.
2.3.11	**Seascape, Landscape and Visual Impacts (SLVIA)** 3.5 The Project will result in significant seascape, landscape, and visual effects to people living, working, and visiting West Sussex during both the construction and operational phases. Therefore, WSCC has concerns about the scale of likely impacts of Rampion 2, in addition to, and in combination with, the currently operating Rampion 1 Offshore Wind Farm. There are concerns that the dDCO (APP-019) does not secure robust design principles relevant to West Sussex receptors necessary to reduce the potential visual effects of the offshore infrastructure by sensitive detailed design if consent is given.	The seascape and visual effects of Rampion 2 wind turbine generators (WTGs) are assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**. The Applicant notes that significant effects on views experienced by people living, working, and visiting West Sussex have been identified at a number of representative viewpoints along the West Sussex coastline. The spatial extent of the Rampion 2 array area has been reduced and designed according to a set of SLVIA specific design principles (Section 15.7 of the **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**) which provide embedded environmental measures by reducing the magnitude of effects and minimising harm on the perceived seascape qualities and views, focusing particularly on the South Downs National Park (SDNP). Opportunities to reduce effects through further design principles specific to West Sussex are limited by the technical, economic and functional requirements of the Proposed Development to produce renewable energy, as well as other environmental factors as presented in the final array area extent in the **Offshore Works Plan** **[PEPD-004]**. The refinement process for the offshore array site selection considered has been presented in Section 3.2 of **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**.The Applicant has produced and submitted a **Seascape, Landscape and Visual Design Principles Clarification Note** **(Document Reference 8.35)** (submitted at Deadline 1), which provides further commentary on these SLVIA specific design principles.

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2.3.12	*Assessment Methodology* i. The assessment undertaken to date and presented in the DCO submission is detailed and although it provides useful information to enable the consideration of impacts on SLVIA aspects, there is a concern that a worst-case scenario relative to West Sussex receptors has not been presented. It must be demonstrated that the Maximum Design Scenario, which has balanced the number of turbines between both Zone 6 and the western Extension Area, is truly the worst case for receptors in West Sussex, if the dDCO allows for a greater number of turbines to be placed to the west. ii. The SLVIA does not provide an assessment of nighttime views from the agreed viewpoints outside of the International Dark Sky Reserve, relative to West Sussex receptors agreed during the Expert Topic Groups (ETGs). iii. The cumulative effects assessment does not include the assessment of the potential decommissioning/repowering of the Rampion 1 Offshore Wind Farm during the operational phase of the Project.	i. The Applicant has produced and submitted a **SLVIA Maximum Design Scenario and Visual Design Principles Clarification Note (Document Reference 8.35)** (submitted at Deadline 1), which provides further justification that the maximum design scenario (MDS), with a balance of turbine numbers between the Zone 6 and western Extension Area, is representative of the worst case in terms of seascape, landscape and visual effects. ii. The assessment of aviation and navigation night-time lighting is undertaken within **Appendix 15.5: Assessment of aviation and navigation night-time lighting, Volume 4** of the ES **[APP-161]** and this assessment includes consideration of effects of night-time lighting on the urban areas outside the South Downs International Dark Sky Reserve (IDSR). The Applicant has provided an additional Supporting Study in **Appendix 15.6: Supplementary Night-Time Viewpoint Assessment, Volume 4** of the ES **[PEPD-024]**). This provides a further assessment of the visual effects of night-time aviation and marine navigation lighting from the agreed viewpoints at Worthing (Viewpoint 10) and Pagham (Viewpoint 13) outside the IDSR, which is supported with night-time photomontage visualisations from these locations. iii. The Applicant recognises that the assessment undertaken in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** does not include assessment of the potential decommissioning / repowering of the Rampion 1 Offshore Wind Farm. The decommissioning programme for the offshore elements of Rampion 1 (ROW, 2018) (submitted in accordance with Requirement 8 of the Rampion Offshore Wind Farm Order 2014) assumes that *'full decommissioning will commence after the design life of the Rampion 1 WTGs (24 years)'*, but that Rampion 1 wind farm *'may be 're-powered' after 24 years with new wind turbines to take advantage of the available lease period with The Crown Estate (40 years), subject to the findings of a new EIA and consent application'*. Under the first scenario, the decommissioning assumption is complete removal of all offshore components of Rampion 1 in 2042 (24 years after April 2018). In this scenario, the 116 WTGs comprising Rampion 1 would be removed from the seascape and would contribute to a reduced effect on seascape, landscape and visual receptors. Under the second scenario (i.e. repowering), the Applicant considers that repowering of Rampion 1 Wind Farm is not in the foreseeable future. This is due to the uncertainty about what may occur and therefore, the project design for a possible future Rampion 1 repowering project with 'new turbines' cannot reasonably be assessed, as it is not well-defined or of sufficient detail to make an informed assessment. Guidance in Guidelines for Landscape and Visual Impact Assessment 3 (GLVIA3) (Landscape Institute and Institute of Environmental Management and Assessment (IEMA), 2013), the *Infrastructure Planning (Environmental Impact Assessment) Regulations 2017* ('EIA Regulations') and PINS Advice Note 17 (PINS, 2019) all encourage an approach of assessing cumulative effects of projects that are reasonably foreseeable (i.e. subject to planning consent, a valid planning application or at scoping/pre-application stage).
2.3.13	*Assessment of Effects* iv. The provided photomontages are useful tools that aid in the assessment of visual effects. They show the significance of impacts likely to be experienced by receptors in West Sussex, in particular, the impacts that would result from the lengthy westerly extension, which would significantly extend the field of view over which impacts on seascape would be experienced; this is a major concern to WSCC.	iv. The Applicant welcomes West Sussex County Council's (WSCC) feedback on the usefulness of the photomontage visualisations (as submitted with **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**) in aiding the assessment of visual effects of the Proposed Development. The Applicant notes WSCC's concerns regarding the significant visual effects identified in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** on views experienced by people living, working and visiting the West Sussex coastline, resulting particularly from the apparent scale and western lateral spread of wind turbine generators (WTGs) in the field of view out to sea.

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	v. Whilst WSCC recognise that offshore wind energy would inevitably result in changes to coastal seascapes and views, it had concerns about the following SLVIA related impacts to West Sussex: a) The scale of both individual wind turbines and the extent of the array as a whole would result in a significantly greater visual impact from a number of viewpoints than views of the existing Rampion 1. This would, in turn, cause the offshore wind farms to become the dominant feature in the seascape and lead to a curtaining effect across Sussex Bay; b) The proposed array would lie close to, and affect the setting of, a number of coastal landscape features. It would significantly affect the seascape character, and detract from the appreciation of the coastal landscape feature; and c) It is acknowledged that after engagement with stakeholders, a set of design principles were developed for the offshore turbine layout during the pre-application stage. This, however, did not lead to a reduction in the offshore boundary to the western extent. Therefore, consideration needs to be given to an offshore boundary and layout that has an overall potential for lesser impacts, which can be secured through the dDCO.	v. a) The spatial extent of the Proposed Development array area has been reduced and designed according to a set of seascape, landscape and visual impact assessment (SLVIA) specific design principles (Section 15.7 of **Chapter 15: Seascape, Landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**) which provide embedded environmental measures by reducing the magnitude of effects and minimising harm on the perceived seascape qualities and views, focusing particularly on the South Downs National Park (SDNP). Opportunities to reduce effects through further design principles specific to West Sussex are limited by the technical, economic and functional requirements of the Proposed Development to produce renewable energy, as well as other environmental factors. The Applicant has produced and submitted a **SLVIA Maximum Design Scenario and Visual Design Principles Clarification Note (Document Reference 8.35)** (submitted at Deadline 1), which provides further commentary on these SLVIA specific design principles. b) The effects of Rampion 2 on seascape and setting of coastal landscape features will primarily be experienced on the coastline of the South Coast Shoreline Landscape Character Assessment (LCA) (SC1) and its associative seascape context of the Selsey Bill to Seaford Head Marine Character Area (MCA) (07). The landscape sensitivity of this coastline is considered to be medium because it is not subject to landscape designation for its scenic quality but does function as a valued coastal landscape resource for tourism and recreation, focused on the beaches and seafront. Although it is susceptible to changes associated with the offshore elements of Rampion 2, there are factors that reduce its landscape sensitivity, including the extent of the urbanised developed coast, the presence of ports and industrial elements, and the extent of tourism related development and activities, which provide detractors to scenic/perceptual qualities, and the WTGs of Rampion 1 are a characteristic feature. The seascape is also of large, expansive scale, with a simple broad coastal landform that is separated from the Rampion 2 array area by open sea and the operational Rampion 1 wind farm. The assessment in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** found that Rampion 2 will result in changes to the visual aspects of the perceived character of the South Coast Shoreline LCA (SC1) as a result of the addition of the Rampion 2 in its seascape context of the Selsey Bill to Seaford Head MCA (07). These changes occur to specific aesthetic/perceptual aspects, particularly its open and exposed character, partial loss of open seascape and change in seascape composition, as a result of further WTG development influence in its open views out across the sea to the horizon, with the changes assessed as being medium to medium-high and the effect significant from the long narrow shoreline extending between Selsey Bill and Shoreham-by-Sea. The characteristic views along the coastline will however remain and will continue to be appreciated. There will still be open views out across the sea, and it will remain an exposed, shoreline landscape whose character is governed by the dynamic influences of the sea and weather, and the linear urban coastal developments that define this coastline. c) The spatial extent of the Rampion 2 array area has been reduced and designed according to a set of SLVIA specific design principles (Section 15.7 of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES) **[APP-056]** which provide embedded environmental measures by reducing the magnitude of effects and minimising harm on the perceived seascape qualities and views, focusing particularly on the SDNP. Opportunities to reduce effects through further design principles specific to West Sussex are limited by the technical, economic and functional requirements of the Proposed Development to produce renewable energy, as well as other environmental factors. The Applicant has produced and submitted a **SLVIA Maximum Design Scenario and Visual Design**

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		Principles Clarification Note **(Document Reference 8.35)** (submitted at Deadline 1), which provides further commentary on these SLVIA specific design principles.
2.3.14	*Mitigation, Compensation and Enhancement* vi. The findings of the SLVIA conclude that even with embedded mitigation measures, significant adverse effects for areas of West Sussex will be felt during all stages of the Project. No attempt at further mitigation through the reduction in size and scale of the turbines or production of design principles for the detailed design stage, if consented, have been presented by the Applicant, to reduce these effects. vii. The Applicant must continue to work with stakeholders to further develop commitments to the layout and extent of turbines to reduce the significant visual impacts. In working with WSCC to secure a set of design principles specific to views experienced from West Sussex, there needs to be commitment by the Applicant that a lesser impactful design can be secured.	vi. As noted in previous responses, opportunities to reduce effects through further design principles specific to West Sussex are limited by the technical, economic and functional requirements of the Proposed Development to produce renewable energy, as well as other environmental factors. The Applicant has produced and submitted a **SLVIA Maximum Design Scenario and Visual Design Principles Clarification Note (Document Reference 8.35)** (submitted at Deadline 1), which provides further commentary on these SLVIA specific design principles. vii. The Applicant will continue to engage with WSCC on matters regarding seascape landscape and visual impacts.
2.3.15	**Socio-Economics** 3.6 The focus of this representation is upon the socio-economics implications of the Project, namely employment, economic output, and the visitor economy. Key areas of concern relating to socio-economics, include: implications of data limitations; the methodology for assessing quantitative effects; limited local benefits of the Project during construction; lack of secured Community Benefit Fund; measures and commitments to the visitor economy sector and; details of provisions and outputs of the Outline Skills and Employment Strategy (OSES) (APP-256). *Assessment Methodology* i. An outdated West Sussex Transport Plan has been used to inform the assessment. The ES should be reviewed against the latest plan (West Sussex Transport Plan 2022-2036) and amended as necessary. ii. For baseline data gathering, the justification of 2020 population estimates when more recent data is available, has not been given. The baseline data included in the OSES has no source/year and, as such, an up-to-date baseline with all sources referenced should be included in the document. iii. A number of data limitations are set out; the implications of these limitations for the assessment are not provided. This includes for people seeking work, GVA data by sector, tourism employment, and the lack of appropriate literature evidence on impacts.	i. The Applicant acknowledges that West Sussex Transport Plan 2011-2026 (West Sussex County Council, 2011) has now been superseded by the West Sussex Transport Plan 2022-2036 (West Sussex County Council, 2022). Nevertheless, the updated strategy shares many of the same objectives as the earlier strategy, including identifying opportunities to enhance walking, cycling and equestrian infrastructure and improve the recreational user experience. As such, the updated strategy does not affect the findings or conclusions in the assessment within **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]**. ii. The Applicant notes that 2020 population estimates were presented in **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]**. This is because, at the time the chapter was produced, more recent data was not yet available in the detail that was required (at the local / county district level). The Applicant has reviewed the latest data for 2022 based on the ONS Mid-Year Population Estimates. The latest data shows that in 2022 Sussex had a population of 1.7 million, 1.03 million of whom are of are of working age (i.e., aged 16-64). This is only slightly different to the data for 2020 presented in the **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** (1.73 million and 1.03 million respectively). Changes in demographics are not considered as a socio-economic effect in the ES (as they were scoped out) and therefore this data was presented as wider contextual baseline data rather than data that is specifically used in the assessment of a change on baseline conditions. Whilst it is acknowledged that more recent data is now available the inclusion of more recent data available would not materially alter the findings of the assessment. iii. The Applicant can confirm that none of the baseline conditions data limitations noted in Section 17.5 of **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** would have a material effect on the assessment. These data limitations increase the uncertainty when assessing and quantifying impacts, but not to the extent that they would affect the significance conclusions. For example, the gaps in literature related to tourism impacts relate to a lack of ex post studies. Despite this, the literature has strengthened over time. This has improved the confidence and robustness of tourism assessment findings related to offshore wind farms.

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	iv. There is extensive reference within the baseline conditions analysis to specific features of the Project. This section should be a review of the baseline without the Project in place. v. Effects on economy and visitor economy should be reported at a local authority level, which would be more appropriate to show how the employment opportunities will be spread within Sussex. vi. The implications of the decision by the Applicant to exclude consideration of induced economic impacts are not clear. vii. A key issue for WSCC is the relatively low economic beneficial impact expected for West Sussex through the construction phase and further assurance work is required. Therefore, it is requested that the Applicant works with WSCC to ensure sufficient strategies are put in place to maximise benefits locally, as per the commitment made, with a view towards the percentage figure for Sussex increasing from a currently low base. viii. Concern is raised about how local businesses could capture supply chain expenditure (see detailed below).	iv. The baseline analysis presents a review of the existing baseline without the Proposed Development in place. However, reference to the Proposed Development is used to help put the baseline assets into the context of the Proposed Development infrastructure, especially with regards to the study areas over which baseline information is presented, which varies by effect. v. The Applicant notes that, through the scoping phase and evidence plan process, Sussex was agreed as an appropriate study area for effects on the economy and on volume and value of tourism because of the scale over which tourism impacts could occur: • Coastal districts in Sussex with potential visual impacts from offshore infrastructure – (City of Brighton and Hove, Lewes, Wealden, Eastbourne, Worthing, Arun, Adur and Chichester); and • Districts onshore infrastructure proposed (Arun, Horsham, Mid Sussex) as well as the South Downs National Park. To address concerns about more localised effects raised following the first Statutory Consultation exercise (July – September 2021) feedback the **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** sought to provide a more detailed assessment on coastal areas and areas in close proximity to the onshore cable infrastructure. This included consideration of areas of potentially higher sensitivity/impact. The local sensitivities were therefore considered in the assessment. Given the evidence base and local characteristics, the Applicant notes that the assessment findings would not change if the whole assessment on value and volume of tourism was conducted at a more granular local authority district level. vi. As noted in paragraph 17.8.5 of **Chapter 17 Socio-economics, Volume 2** of the ES **[APP-058]** "*the socio-economic assessment excludes the induced impacts generated by Rampion 2 across all phases, as these are typically affected by greater uncertainty and are more difficult to measure and defend robustly in terms of their scale and additionality.*" This follows approaches taken on other offshore wind projects. This assessment approach was taken to ensure that the economic effects were robust and not overstated. The implications of excluding this are that there is further employee expenditure-related economic benefits that the assessment has not quantified. Based on the Applicant's knowledge of economic multipliers and the scale of employment of Rampion 2, the inclusion of induced effects would be similar but lower than the indirect effects and would not materially impact on the magnitude of impact assessment for jobs and gross value added (GVA). vii. Please refer to the Applicant's response in **reference 2.3.16** for points x, xi, and xii below. viii. Please refer to the Applicant's response in **reference 2.3.16** for points x, xi, and xii below.
2.3.16	*Mitigation, Compensation and Enhancement* ix. The assessment identifies measures aimed at reducing the disruption caused by the Project and the consequent impacts on tourism economy. However, measures and commitments that would support a boost to the tourism sector specifically are not provided. These should be provided to reflect the priority the sector is given in the Economy Plan for West Sussex. x. The OSES lacks specific detail with regards to existing skills gaps and current levels of provision, and on specific initiatives which are tailored to local issues and need. A route map for developing the OSES further should	ix. Given that the assessment does not find a significant effect on tourism, the Applicant is not required to provide additional measures and commitments that would support a boost to tourism. This would only be provided where significant effects have been identified. Any measures to boost the tourism sector would therefore need to be agreed outside the planning process. x & xi. The **Outline Skills & Employment Strategy (oSES)** **[APP-256]** was intentionally high-level and the Applicant was not in a position to document concrete commitments without further consultation with key skills and employment stakeholder organisations in Sussex. The first tranche of consultation took place between July and October 2023 when The Applicant met with nine skills and employment stakeholder organisations. The

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	be provided, including setting out when engagement with WSCC and other stakeholders is needed and how it will take place. xi. The Applicant states they will identify opportunities for companies based or operating in the region to access the supply chain for the Project, and that this is secured through a commitment (C-34) in the OCoCP. This measure, however, is not included within the OCoCP and should be addressed. xii. Reference within the OSES is made to a Community Benefits Package, however it is described as 'remaining separate' from the planning process. Due to the adverse effects identified by the Project, the Community Benefits Package should be a firm commitment and secured through the DCO.	results of this consultation have fed into the second iteration of the **oSES [PEPD-037]**, submitted to the Examining Authority (ExA) in January 2024. This latest version of the **oSES [PEPD-037]** includes seven additional key skills and employment stakeholder organisations and The Applicant has identified two additional organisations to consult. Meetings will be held with these stakeholders in Q1 2024. As implied in Paragraph 43 of the **oSES [PEPD-037]**, following this next series of consultation meetings and the examination itself, the Applicant will produce a final Skills and Employment Strategy (SES) outlining key objectives, initiatives and activities, which will also include greater detail on timelines, monitoring and commitments'. The **oSES [PEPD-037]** is very much an evolving work-in-progress. The final oSES is secured through Requirement 33 in the **Draft Development Consent Order [PEPD-009]**. The Industry Leadership section of the latest **oSES [PEPD-037]** sets out a series of initiatives to respond to local skills gaps and local need, and opportunities for local companies to access the supply chain for the project, all of which will be further developed during the subsequent consultation. Examples of local initiatives set out in the latest **oSES [PEPD-037]** include: Support for jobs and skills in the local supply chain: • Encouraging and supporting growth and employment in local supply chain companies; • Increasing visibility of local Small and Medium-sized Enterprises (SMEs) within the employment market; • Promoting training and employment opportunities to local residents; • Supporting transition from other sectors, e.g. military, fossil fuel-based sectors, etc.; and • Creating opportunities to collaborate with other developers, Tier 1 contractors, and companies in the supply chain. While the **oSES [PEPD-037]** doesn't specify how we will deliver these initiatives, some of those we are seeking to develop which will be set out in the final SES, include: • Mapping the supply chain across tiers in the southeast area, to include clarification of capacity and capability to support construction and operational elements for Rampion 2; • Launch of the Supplier Engagement Platform, which will set out the likely Rampion 2 opportunities to come during construction and operation; and • Meet the Buyer Events / Supplier Engagement Days to offer local suppliers the chance to meet Rampion 2's Tier 1 contractors to maximise opportunities for potential contracts. xii. Community benefits are not a legal or DCO requirement and are quite distinct from the consenting process, a point reiterated in the UK Government (Department for Energy Security and Net Zero) response to the consultation on Community Benefits for Electricity Transmission Network Infrastructure (December 2023), which stated:

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		"The proposals on community benefits for electricity transmission network infrastructure discussed within this document will remain separate to the planning process. It will not be a material consideration in planning decisions, and not secured through those decisions." That said, Rampion 2 will be a permanent neighbour in the Sussex community and the Applicant intends to develop and implement a community benefits package of proposals. In the second half of 2024, the Applicant will therefore be consulting key stakeholders and local communities on how a community benefit package could best support Sussex communities. The final package may include a range of initiatives to benefit business, education and residential communities.
2.3.17	**Landscape and Visual Impact (LVIA)** 3.7 The LVIA demonstrates that, even with mitigation, the construction and operation of the Project would give rise to wide ranging significant impacts on a number of both landscape and visual receptors. The LVIA downplays landscape and visual impacts of both construction activities (for the entire Project) and installation/operation of the Oakendene substation. In this regard, the LVIA places too great a reliance on reinstatement being carried out as soon as possible, which cannot be guaranteed, and there is too strong a reliance on specific selected viewpoint locations (for which additional VPs are considered necessary). Overall, therefore, there is a failure to give consideration the full range landscape and visual receptors likely to be impacted. 3.8 Visual impacts of the Oakendene substation have been downplayed, with additional viewpoint locations and associated visualisations required to best represent key visual receptors and provide accurate assessment of the level of impacts, and to inform appropriate mitigation. Design principles identified in the Design and Access Statement (AS-003) need further refinement, engagement, and to be presented in a clearer manner. *Assessment Methodology* i. The LVIA places too much reliance on specific selected viewpoint locations and fails to give consideration to the full range of landscape and visual receptors likely to be impacted, which will be wide-ranging as indicated by Zones of Theoretical Visibility (ZTVs). There is a need to provide a full assessment/quantification of all visual receptors likely to be impacted, and to recognise that selected viewpoints are only indicative of impacts for a limited proportion of receptors affected. ii. With specific regard to viewpoints identified, it is considered that additional viewpoints and/or amended photography/visualisations are required to understand the extent of visual impacts, in particular, at construction compounds and the Oakendene substation. iii. The submitted Residential Visual Amenity Assessment (RVAA) is not considered fit for purpose. The findings in respect of visual impacts	3.7 & 3.8 – These paragraphs provide an overview of West Sussex County Council's (WSCC) concerns which are elaborated upon in points i. to vii. The landscape and visual impact assessment (LVIA) is reported in **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** which is supported by **Figures 18.1 to 18.76, Volume 3** of the ES **[APP-098-103]** includes 69 viewpoints (viewpoint locations have been discussed and agreed with a number of stakeholders see paragraph 18.4.41 within **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**) illustrating the onshore elements of the Proposed Development. The LVIA draws from the methodology and detailed assessment set out in: • **Appendix 18.1: Landscape and visual impact assessment methodology, Volume 4** of the ES **[APP-167]** • **Appendix 18.2: Viewpoint Analysis, Volume 4** of the ES **[APP-168]** • **Appendix 18.3: Landscape Assessment, Volume 4** of the ES **[APP-169]** • **Appendix 18.4: Visual Assessment, Volume 4** of the ES **[APP-170]** • **Appendix 18.5: Residential Visual Amenity Assessment, Volume 4** of the (ES) **[APP-171]** • **Appendix 18.6: Viewpoint directory, Volume 4** of the ES **[APP-172]** It is agreed that 'even with mitigation' the construction effects of the onshore elements of the Proposed Development would result in a number of significant landscape and visual effects. This would be temporary through the construction phase and in some cases extending into the early years of the operation and maintenance phase. The Applicant disagrees regarding WSCC's assertion that the LVIA 'downplays' the construction effects of the entire Proposed. The LVIA is focused on the assessment of the onshore elements of the Proposed Development. Considering the landfall and onshore cable corridor, the LVIA has focused on a 2km Study Area (approximately 4km wide in total, 2km from the proposed DCO Order Limits), agreed with key stakeholders. This is greater or equal to the Study Area used for other similar projects for example, the Awel y Mor Offshore Wind Farm used a Study Area of 1km on either side of the onshore cable corridor. In addition, **Figure 18.4a-c** and **18.6b, Volume 3** of the ES **[APP-098-103]** shows an extended Zone of Theoretical Visibility (ZTV) which has not been cropped to the Study Area and a 5km buffer on either side of the onshore cable corridor. There are a total of 60 illustrated, annotated and assessed viewpoints along the onshore cable corridor at varying distances also agreed through discussions with stakeholders. This compares with only the provision of contextual photos provided for other similar projects such as the Awel y Mor Offshore Wind Farm.

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	(not visual amenity) identify significant impacts for most individual properties assessed, which have not been considered or incorporated into the LVIA, including as part of consideration of impacts on settlements. This demonstrates a further underestimation of the extent of significant visual impacts upon key receptors. iv. In addition, visualisations provided thus far omit the tallest proposed structures (lightning mast) and thus do not provide a true representation of that proposed.	The Applicant disagrees with WSCC's assertion that there has been '*too great a reliance on reinstatement being carried out as soon as possible*' and while there is a need for mitigation to be carried out in a timely manner this is not a matter that has affected the level of assessed effects (see **reference 2.3.18**) which are predicated on the sensitivity of the receptor and the maximum scale / magnitude of the change and geographical extent. The Applicant also disagrees with WSCC's assertion that there has been '*too strong a reliance on specific selected viewpoint locations*' as each landscape and visual receptor has been assessed separately from the viewpoint analysis within **Appendix 18.3: Landscape Assessment, Volume 4** of the ES **[APP-169]** and **Appendix 18.4: Visual Assessment, Volume 4** of the ES **[APP-170]**. It is not accepted that the 'full range landscape and visual receptors' is not considered. For example, the LVIA includes visual assessment of sequential views from the affected lengths of 114 public rights of way (PRoWs) and the landscape assessment includes 19 Landscape Character Areas and numerous landscape elements along the onshore cable corridor. The Applicant disagrees with WSCC's assertion that the '*visual impacts of the Oakendene substation have been downplayed*'. The site is well screened by existing perimeter vegetation which will be retained and consequently has a limited ZTV as indicated in **Figure 18.2a, Volume 3** of the ES **[APP-098-103]**. The views are represented by five viewpoints, four of which include photomontages for years 1, 5 and 10 of the operation and maintenance phase. The LVIA for the onshore substation is reported in **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** and includes assessments, informed by site surveys, of the views from Cowfold and individual residential properties, three transport routes, and four PRoWs. Whilst it is accepted that a viewpoint from Oakendene Manor would complement the assessment, the addition of a viewpoint is unlikely to alter the identification of a significant visual effect, reported in the LVIA (**Appendix 18.5: Residential Visual Amenity Assessment, Volume 4** of the (ES) **[APP-171]**). Access to land at Oakendene Manor was not available prior to DCO Application submission and efforts are being made to complete this during the Examination as a result of consultation with WSCC. The Applicant is considering the extent to which the design principles identified in the **Design and Access Statement** **[AS-003]** can be refined and how the principles could be re-presented. Please see the Applicant's response to points i. to vii. below. (i) The Applicant does not accept that there is "*too strong a reliance on specific selected viewpoint locations*". The viewpoints and visualisations illustrate the range of likely effects both near and far to the onshore elements of the Proposed Development and help to define the focus of the LVIA and the likely levels of effect. It should be noted that whilst the ZTV indicates theoretical visibility, it cannot illustrate areas of significant effect. Equally the LVIA Study Area is not intended to encapsulate all areas from which the Proposed Development would be visible, rather it is indented to capture those areas of significant effects. The viewpoint analysis is provided in **Appendix 18.2: Viewpoint Analysis, Volume 4** of the ES **[APP-168]** with a summary in Tables 1.1-3. It should be noted that this part of the LVIA is referred to as 'analysis' and not assessment. In contrast, the LVIA provides a full assessment of visual receptors in **Appendix 18.4: Visual Assessment, Volume 4** of the ES **[APP-170]**. For example, the LVIA assesses 114 PRoWs overlapped by the ZTV. Viewpoints are referred to where relevant, but the assessment of each PRoW draws on desk and site-based study, specific to each receptor and records a sequential assessment of the visual effects along the effected part of each route. This is in contrast to a 'single' viewpoint assessment from a fixed point at one location. It would not be practical or proportionate to provide a viewpoint for each PRoW, but where appropriate, reference to a viewpoint is provided to help illustrate the assessment. The same principle has been applied to all landscape and visual receptors some of which are area based (e.g. settlements or landscape character areas) and other linear and therefore cannot be fully represented by one viewpoint. (in this sense there is agreement with WSCC that

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		"*selected viewpoints are only indicative of impacts for a limited proportion of receptors affected*"). Collectively the LVIA provides an assessment of a proportionate range of receptors and visualisations that illustrate a range of impacts sufficient to allow a reasonable understanding of the likely significant effects of the onshore elements of the Proposed Development. (ii) The LVIA Study Area for the onshore substation at Oakendene has been subject to detailed desk and site-based assessment as well as discussion and agreement on viewpoint location with key stakeholders. The onshore substation site is well screened by existing mature vegetation and the design process focused on protecting and enhancing this existing screening. The assessment includes five viewpoints (a further three viewpoints were not progressed as a result of the assessment in the Preliminary Environment Information Report (PEIR) provided at the first statutory consultation in 2021 (RED, 2021) due to high levels of vegetation screening). Access to land at Oakendene Manor was not available prior to DCO Application submission and efforts are being made to complete this during the Examination as a result of consultation with WSCC. Whilst it is accepted that a viewpoint from Oakendene Manor and associated land would complement the assessment, the addition of further viewpoints is unlikely to alter the conclusions reported in the LVIA. Nevertheless, the Applicant confirms that they are in the process of seeking to agree access to Oakendene Manor to undertake viewpoint photography and will engage with WSCC, and Horsham District Council, in this process and supply visualisations of additional viewpoint photography at a later Examination Deadline subsequent to completion of this work, where required. In summary, the following viewpoints are noted: • Viewpoint SA1: Kent Street – **Figures 18.10a-d, Volume 3** of the ES **[APP-098]** demonstrates the views through a gap in vegetation along Kent Street during the winter months; • Viewpoint SA2: A272 – **Figures 18.11a-e, Volume 3** of the ES **[APP-099]**. A viewpoint was considered at the new access point, but safety concerns precluded this location and Viewpoint SA2 was provided as an alternative. Significant effects from along the A272 are reported in the LVIA and the design principles in the **Design and Access Statement** (**DAS**) **[AS-003]** and **Outline Landscape and Ecology Management Plan (LEMP) [APP-232]** include mitigation and are secured through Requirements 8 and 12 of the **Draft Development Consent Order [PEPD-009]** . The outline layout design shows a curved approach road to the substation, so that direct views can be screened by landscaping. It has been agreed with WSCC to examine a possible alternative viewpoint on land at Oakendene Manor on the southern side of the fence, at the access point to avoid safety concerns associated with taking photos on the A272. The provision of an additional viewpoint at this location may be useful for future detailed design although it would not alter the conclusions in the LVIA that significant effects on views from the A272 would occur at this point; • Viewpoint SA3: PRoW 1786 Taintfield Wood – **Figures 18.12a-j, Volume 3** of the ES **[APP-099]**. The viewpoint is representative of the views from the footpath between Kent Street and Oakendene Industrial Estate and captured the view from the edge of Taintfield Wood towards Oakendene Manor. Although alternative viewpoints could have been provided from the route of the onshore cable corridor or closer to the onshore substation, this viewpoint is between the two and views across to Oakendene Manor which is revealed on exiting the wood. Although a further viewpoint could have been provided as suggested, it is not considered by the Applicant to be proportionate and it would not alter the conclusions in the LVIA that significant effects on views from the footpath would occur and affect much of this route. The **Outline LEMP [APP-232]** includes partial mitigation and is secured through Requirement 12 of the **Draft Development Consent Order [PEPD-009]**;

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		• Viewpoint SA7: PRoW 1788 southwest of Site, west of Taintfield Wood – **Figures 18.13a-h, Volume 3** of the ES **[APP-099]**. The viewpoint illustrates significant effects from receptors along this route and is representative of significant effects from the A272 and the residential properties, which are included in the LVIA; and • Oakendene Manor – it has been agreed with WSCC to pursue a further viewpoint to the northwest of the onshore substation in the vicinity of Oakendene Manor. The provision of an additional viewpoint at this location may be useful for future detailed design although it would not alter the conclusions in the LVIA of significant effects on views from this location. There is a practical difficulty in positioning viewpoints too close to a development to the extent that they cannot be viewed in their landscape context and the whole of the image would be taken up by a close-range image of development which cannot be modelled at a detailed level and would extend beyond the confirms of the image. Receptors this close to development obviously have a high magnitude of change and that is reported in **Chapter 18: Landscape and visual impact assessment, Volume 2** of the ES **[APP-059]** where this occurs. Viewpoints at further distance are considered by the Applicant to be more useful in that they help to define the outer geographical extent of significant effects. 1. (iii) The methodology for Residential Visual Amenity Assessment (RVAA) accords with the advice in the Landscape Institute's Residential Visual Amenity Assessment Technical Note 2/19, 15 March 2019 and full details of this are provided in **Appendix 18.5: Residential Visual Amenity Assessment, Volume 4** of the ES **[APP-171]** including Annex A. As such the RVAA is considered fit for purpose and follows a methodology that has been used for many other developments and found to be acceptable. 2. The RVAA addresses the private views from residential properties and the Landscape Institute's Residential Visual Amenity Assessment Technical Guidance Note 2/19 ('the LI guidance' CD009.003) advises that the planning system is designed to act in the public interest when making planning decisions. It is not uncommon for significant adverse effects on views and visual amenity to be experienced by people at their place of residence as a result of introducing a new development into the landscape. In itself this does not necessarily cause particular planning concern. However, there are situations where the effect on the outlook / visual amenity of a residential property is so great that it is not generally considered to be in the public interest to permit such conditions to occur where they did not exist before. In summary, there are essentially two stages to a RVAA concerning the identification of significant effects and the consideration of RVAA. The RVAA (Stage 1) identifies those properties which are likely to be significantly affected and subjects these to RVAA (Stage 2) which is summarised in Table 1-2 and detailed for each property in Annex A of **Appendix 18.5: Residential Visual Amenity Assessment, Volume 4** of the ES **[APP-171]**. By assessing those properties which are 'most affected' or closest to the onshore cable corridor the RVAA has included the 'worst case'. If these properties are assessed as not breaching the residential visual amenity threshold, it can be reasonably assumed that properties less affected or further distance from the onshore cable corridor would not breach that threshold either. Furthermore, the RVAA makes a clear distinction between visual effects (Stage 1) and effects on residential visual amenity (Stage 2). Table 1-1 of the RVAA (**Appendix 18.5: Residential Visual Amenity Assessment, Volume 4** of the ES **[APP-171]**) provides information / rational for how residential properties were selected for RVAA and included in the RVAA. This has allowed a proportionate approach which takes account of the main living rooms and garden areas within each residential property included in the RVAA. The settlement assessment in **Appendix 18.4: Visual Assessment, Volume 4** of the ES **[APP-170]** considers the visual effects likely to be experienced from settlements, which includes the residential areas public realm and public open spaces within the

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		settlement boundaries that will be frequented by people and also refers to the RVAA which comments on particular properties, in most cases located beyond a settlement boundary. It is not therefore accepted that the settlement assessment has been underestimated. (iv) It is agreed that the visualisations omit the lightning mast at 18m tall. This is because the visualisations provide an impression of the Proposed Development based on the main components as described in the project description in **Chapter 4: The Proposed Development, Volume 4** of the ES **[APP-045]** and the Indicative layouts and elevations shown in Appendix A of the **Outline LEMP** **[APP-232]**. The lightning mast, although tall, is a narrow rod that would have a limited visual impact when viewed from the viewpoints and would not contribute towards significant visual effects.
2.3.18	*Assessment of Effects* v. The LVIA downplays the potential landscape and visual impacts of construction activities, considering them short-term, when 3.5-4 years is a considerable period of time to be subjected to moderate to major and significant impacts. For the cable route, too much reliance is placed on reinstatement being carried out as soon as possible, which cannot be guaranteed as phasing/sequencing of works has yet to be determined. Based on experience of Rampion 1, large lengths of the cable route and associated haul routes are likely to remain in place throughout the construction period to provide access and for cable pulling/jointing activities, which extend the periods over which landscape and visual impacts take place. vi. It is not clear how selected Viewpoint Locations and Analysis (Appendix 18.2) has considered the impacts of visibility splays (be that for new or upgraded side access points), with the LVIA suggesting that Commitment C-165 (visibility to DMRB standards) would reduce landscape impacts. On the contrary, such a specification would likely open views and give rise to increased landscape/visual impacts. Such impacts are not reflected in visualisations. vii. As the key and most prominent permanent onshore structure, it is crucial that the full extent of landscape and visual impacts at the Oakendene substation are understood and opportunities to minimise impacts are maximised. At present, visual impacts at the Oakendene substation have been downplayed, with additional viewpoint locations and associated visualisations required to best represent key visual receptors and provide accurate assessment of the level of impacts and to inform mitigation.	(v) The Applicant disagrees with WSCC's assertion that the landscape and visual impact assessment (LVIA) has 'downplayed' the potential landscape and visual effects of the construction activities by considering them as 'short-term'. It is technically correct to describe the duration of the landscape and visual effects during the construction phase as 'short-term' which covers development under 5 years duration in accordance with the Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA3) (Landscape Institute and Institute of Environmental Management and Assessment (IEMA), 2013) paragraph 5.51. The LVIA methodology is set out in **Appendix 18.1: Landscape and visual impact assessment methodology, Volume 4** of the ES **[APP-167]** and in turn accords with GLVIA3 which also describes the duration of 'medium term' effects as 6-10 years and 'long term' effects as greater than 10 years. The level of effect and its significance is assessed for each landscape and visual receptor through a combination of the sensitivity of the receptor, and the scale or magnitude of change and its geographical extent in accordance with GLVIA3 and the LVIA methodology set out in **Appendix 18.1: Landscape and visual impact assessment methodology, Volume 4** of the ES [**APP-167**]. The duration of the effect is reported separately and is not part of the assessment of the level of effect and its significance as noted in paragraphs 1. 5.14 and 1.6.14 of the Appendix. The duration is however used to describe the nature of the effect. This approach ensures that the level of effect is presented as a 'worst case' and not 'discounted' due to the short-term duration of the effect. This demonstrated by the summary reporting in Tables 18.40-45 of **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**, which describe the sensitivity, magnitude, level of effect and its significance separately under the heading for the phase of development and its duration. By way of example the A3 Arun and Adur Open Downs Landscape Character Area is assessed as Major (combination of High magnitude and High sensitivity as guided by the matrix in Table 1-5 of **Appendix 18.1: Landscape and visual impact assessment methodology, Volume 4** of the ES **[APP-167]**. This is the highest level of effect possible in the LVIA and demonstrates no discounting or downplaying of the level of effect or its significance due to the nature of the effect being of short term duration. In other examples where the magnitude is lower, for example the England Coast Path the magnitude is described as Medium due to reductions in the scale and / or geographical extent due to vegetation screening and intervening distance. This has resulted in Major / Moderate level of effect as guided by the matrix in Table 1-5 which is the highest level of effect possible for that combination of sensitivity and magnitude in the LVIA and demonstrates no discounting or downplaying of the level of effect or its significance due to the nature of the effect being of short term duration. In describing the nature of the effect, the LVIA recognises that the onshore development will be subject to phases of development and progressive restoration which would cause the assessed levels of effect would reduce or vary during the construction phase according to the phasing. The phasing details are not currently available to the assessment and consequently there is no 'effects pathway' by which the assessment could be

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		downplayed or discounted due to the duration or phasing of the works. Therefore, a 'worst case' is assessed and significant effects are not 'downplayed'. Whilst the phasing/sequencing of works has yet to be determined, the Applicant considers it is correct to describe the nature of these effects as part of the assessment which are described in Commitment C-19 of the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) outlines '*The onshore cable will be constructed in discrete sections. The trenches will be excavated, the cable ducts will be laid, the trenches back-filled and the reinstatement process commenced in as short a timeframe as practicable'*. Details of how this will be secured are set out in reference 2.3.8. (vi) Whilst Commitment 165 (*Construction access will be provided with visibility splays designed to Design Manual for Roads and Bridges (DRMB) design standards as agreed with West Sussex County Council (WSCC)*) is relevant to the LVIA it is agreed that this should not have been included in Table 18-25 of **Chapter 18: Landscape and visual impact assessment, Volume 2** of the ES **[APP-059]** as an embedded environmental measure that would mitigate landscape and visual effects. The viewpoints illustrated in **Figures 18.10-76, Volume 3** of the ES **[APP-099]** do not show the details of vegetation removal or visibility splays and for the onshore cable corridor they are limited to the extent of the onshore cable corridor and the envelope for temporary construction compounds. Where vegetation removal is indicated on the Vegetation Retention Plans in **Appendix B** of the **Outline Code of Construction Practice** **[PEPD-033]** this is included in the LVIA The Applicant is undertaking a review of accesses to establish if there are any instances where the extent of vegetation removal may exceed that currently shown on the vegetation retention plans in Appendix B of the **Outline Code of Construction Practice** **[PEPD-033]**. Should the outcome of this exercise require updates to the vegetation retention plans or other DCO Application documents this will be updated in due course. (vii) Please refer to the Applicant's response to **reference 2.3.17 part ii** above.
2.3.19	*Mitigation, Compensation and Enhancement* viii. The mechanism to secure meaningful advance planting at the substation is unclear, and further consideration needs to be given to maximising advance planting opportunities. Design principles identified in the Design and Access Statement (DAS) need further refinement and to be presented in a clearer manner and need to provide greater certainty over the likely appearance, scale and design of structures proposed. Further, given the substation would be a significant alien feature within a rural setting, proposed planting requires refining and reinforcing to ensure that existing tree/hedgerow losses are compensated, and screening effects maximised. ix. Whilst the proposed mitigation measures as set out in the Commitments Register and associated outline control documents are noteworthy, in many cases there is considerable uncertainty as to extent of mitigation they may realistically provide. Many of the commitments include significant caveats such as 'where this is the best environment solution and is financially and	(viii) The Indicative Landscape Design for the onshore substation at Oakendene and its design principles are set out in the **Design and Access Statement (DAS)** **[AS-003]** and further expanded on in the **Outline Landscape and Ecology Management Plan (LEMP)** [**APP-232**]. Design elements within the LEMP will be secured and developed through Requirements 12 and 13 of the **Draft Development Consent Order** **[PEPD-009]** and Commitment C-196 of the **Commitments Register** **[APP-254]**. Further, the Design principles identified in the **DAS** **[AS-003]** which are secured through Requirement 8 of the **Draft Development Consent Order** **[PEPD-009]** are expanded on in the **Outline LEMP** **[APP-232]** and the design will be developed further as the design process matures in the stage specific LEMP as noted above. DCO Requirement 12 ensures that a LEMP is provided for agreement with the relevant planning authority and Natural England. Requirement 13 of the **Draft Development Consent Order** **[PEPD-009]** ensures that the LEMP is delivered as agreed, whilst Requirement 14 secures the agreement and implementation of a Biodiversity Net Gain (BNG) strategy. Requirement 22 ensures that a stage specific Code of Construction Practice is submitted and approved by the relevant planning authority in consultation with the Environment Agency, the statutory nature conservation body, the highway authority and the lead local flood authority. The Applicant is considering the extent to which the design principles identified in the **Design and Access Statement** **[AS-003]** can be refined and how the principles could be re-presented.

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	technically feasible' or 'where practicable/necessary/possible', meaning it is unclear as to what can or will be realistically secured by DCO requirements. x. Of particular concern for construction activities along the cable route, is the reliance on reinstatement being carried out as soon as possible and minimising periods of activities/storage of materials. However, this cannot be guaranteed as phasing has yet to be determined (i.e. it is to be dealt with by requirement). This is a considerable area of uncertainty, which will be a key factor in determining the magnitude of landscape and visual impacts. Proposed Requirements and Outline Control documents provide little certainty as to the likely duration of impacts.	(ix) There have been opportunities for the development of environmental measures which have been adopted to reduce the potential for environmental impacts and effects. These were included directly into the design of Rampion 2 as embedded environmental measures and are detailed in the **Commitments Register** **[APP-254**] (updated at Deadline 1 submission). The Commitments Register was initially presented in the Scoping Report and subsequently updated throughout the Statutory Consultation exercises and in the Environmental Statement to reflect design evolution and consultation feedback. The **Commitments Register** **[APP-254]** (update at Deadline 1 submission) includes a column for the securing mechanism for each embedded environmental measure and its related commitment reference. This cross-refers to the mechanism, for example a requirement in the **Draft Development Consent Order (DCO)** **[PEPD-009]** Schedule 1 Part 3. Where there is an accompanying document such as an outline plan submitted with the DCO Application with which works must be undertaken in accordance with, this is also referred to under the 'Relevant Application Documents' column. The Applicant provided the **Commitments Register** **[APP-254]** (updated at Deadline 1 submission) as part of the DCO Application and have provided an update to this at Deadline 1 to include further detail e.g. the full reference to DCO requirements and addition of the location of further information within the Application documents. (x) Please refer to the Applicant's response in **reference 2.3.18 part v** above. The magnitude of the landscape and visual effects is based on scale and geographical extent and not duration. It provides a worst-case assessment of the level of effects and significance for the periods of construction and operation which define the duration of these effects. As more detailed control documents are developed there will be greater certainty around phasing, duration and timing of the assessed effects which currently occur within the construction phase.
2.3.20	**Noise and Vibration** 3.3 The submitted assessment of noise and vibration impacts concludes that there would be no significant noise and vibration impacts on any identified receptors either during construction or operation of the onshore elements of the Project. Given the nature of construction activities (and their significant duration, in particular, at construction compounds) and noting the low background noise levels in the vicinity of the Oakendene substation, this is concerning and considered an underestimation. Noise impacts are downplayed with too much reliance on embedded mitigation measures, the effectiveness of which cannot be certain at this stage. WSCC is also concerned that the Oakendene substation operational noise impacts are underplayed within the assessment. *Assessment Methodology* i. The methodology to establish the magnitude of construction impacts, in many cases results in noise levels above BS5228 thresholds (for medium impacts) only giving rise to low impacts, which are not significant. This underestimates potential impacts. Part of the methodology is seemingly predicated on the duration of some impacts being no more than one month; however, it is unclear how these durations have been identified, whether these represent a worst	Construction noise will be mitigated and managed through the application of the stage specific Code of Construction Practice in accordance with the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** which will be submitted to and approved by the relevant planning authority (Requirement 22 within the **Draft Development Consent Order (DCO)** **[PEPD-009]**). i) British Standard 5228-1 (British Standards Institution (BSI), 2014) is the Secretary of State (SoS) approved code of practice for construction noise. The Applicant has illustrated the potential magnitude of the noise impacts by comparing the predicted construction noise levels to the existing ambient noise levels at each receptor location. The Applicant has assessed the magnitude of impact with reference to BS5228-1 Annex E (BSI, 2014) which states: "*Noise levels generated by site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB from site noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in significant effect.*" ii) The Applicant considers that the temporary construction compound activity levels reported are worst-case. This is through an accumulation of activities that are unlikely to all be operating at the same time, along with the use of percentage on-times that suggest plant would be working for longer than would generally be expected. Generally, the receptors assessed are the most exposed to a particular element of the Proposed Development. If properties are considered to be omitted, it is likely that a more sensitive receptor at a

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	cases scenario, and even if only for a one-month that the magnitude of change should still be higher. ii. There is limited information on the methodology adopted to establish a 'key' receptor and how receptors (e.g. individual residential properties) have been established. Concerns are raised that some properties/receptors may have been missed or omitted, including no reference to Public Rights of Way (PRoW). iii. No noise contours for the cable route have been provided and the full extent of receptors are not identified in the accompanying figures. iv. The assessment suggests cable trenching and trenchless crossings are sufficiently temporary that cumulative impacts with other developments do not need to be considered. Given concerns regarding the potential duration and impacts of such works and high levels of noise that would be generated by trenchless crossings on a 24hr basis, concerns are raised about this omission. v. Construction plant identified is not comprehensive, leading to noise impact predictions being underestimated.	similar distance to the project has been used as the representative receptor. Public Rights of Way (PRoWs) are an important receptor, however BS5228-1 Annex E states, "*Noise levels generated by site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB LAeq, T from site noise alone, for the daytime, evening and night-time periods, respectively; …For public open space, the impact might be deemed to cause significant effects if the total noise exceeds the ambient noise (LAeq, T) by 5 dB or more for a period of one month or more. However, the extent of the area impacted relative to the total available area also needs to be taken into account in determining whether the impact causes a significant effect*." Therefore, the exposure of a PRoW to high noise levels is not in itself a significant effect. This is usually because users of such resources will not tend to be resident in any one area for a long time exposing themselves to noise and can move away from that noise, whereas static receptors (e.g. residential dwellings) are unable to relocate away from the noise. Although certain receptors are named as being representative, and these will generally be the nearest receptor to an element of the works, all receptors within the Study Area, which is defined within Section 21.4 of **Chapter 21: Noise and vibration, Volume 2** of the ES **[APP-062]**, have been assessed. iii) Noise contours have not been provided for the cable route on the basis that this construction activity moves linearly, and the noise contours would exaggerate the magnitude of noise from the works. The qualitative assessment concludes that receptors will be subject to minor adverse sound levels for one or two days as the trenching, cabling, or the refilling of the trench works occur in the near vicinity of residential receptors, which is considered not significant in EIA terms. iv) The Applicant maintains that cumulative effects with other developments are very unlikely to give rise to significant effects. The night-time works are accompanied by more stringent thresholds of significance. The same temporal thresholds apply irrespective of the time of day that the works are occurring and as such, cumulative noise effects from other developments is unlikely. Commitment C-263 in the **Commitment Register** **[APP-254]** (updated at the Deadline 1 submission) includes the production of a Noise and Vibration Management Plan (NVMP) during detailed design based on the principles in the **Outline Code of Construction Practice** **[PEPD-033]** secured via Requirement 22 in the **Draft Development Consent Order** **[PEPD-009]**: "*During detailed design the contractor will review the construction noise assessments. Where any significant deviation from the initial sound level predictions is identified, such that levels in excess of the BS 5228 thresholds of significance are likely, the Noise and Vibration Management Plan (NVMP) shall be updated or a Section 61 application will be made to the relevant Local Planning Authority".*
2.3.21	*Assessment of Effects* vi. There is a lack of consideration and/or noise impacts of cable route construction and side access routes are downplayed. Consideration of impacts of cable route construction and use of side accesses are largely excluded as considered short in duration, despite having the potential to result in noise levels above 75dB at sensitive noise receptor locations. The assessment fails to take into account longer duration works associated with construction and does not recognise that the cable route will likely serve as a key haul route in rural areas and thus remain in place for long periods.	vi) The noise effects of the onshore cable route and accesses have been considered in Section 21.9 of **Chapter 21 Noise and vibration, Volume 2** of the Environmental Statement (ES) **[PEPD-018]**. The levels above 75 decibels (dB) would not be experienced all day, every day of the works, however is a worst case. When taking into consideration the temporal threshold of significance from BS5228-1 (BSI, 2014), the approved code of practice for construction noise, such noise levels will not be present for the periods of time that would make the noise a significant effect. If the situation changes and significant effects become likely, then there is commitment C-263 of the **Commitments Register** **[APP-254]** (which has been updated at Deadline 1) that requires *"the Noise and Vibration Management Plan (NVMP) shall identify the necessary mitigation to avoid this. If necessary, Section*

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	vii. Noise impacts from construction compounds at night-time are underplayed. Despite noise level predictions identifying several properties/receptors close to trenchless crossings (night-time) being subject to noise levels significantly above BS5228 thresholds, conclusions downplay the magnitude of impacts as 'low' and are predicated on the use of acoustic barriers. At this stage, there are no guarantees that barriers will be effective or practicable in all circumstances. viii. Except for trenchless crossings, there is limited consideration of works that may be required outside of normal working hours. Whilst it is accepted that these will not be the norm and that provisions are made for further approval to be required as part of stage specific CoCPs, there are likely to be several activities that may require 'out of hours' working, which experience of Rampion 1 OWF has shown will regularly need to be exceeded. ix. Oakendene Substation operational noise impacts are underplayed. Despite noise level predictions identifying three properties/receptors close to the substation being above background levels by +4 or +5dB (night-time), the conclusions downplay the magnitude of impacts as 'low' and not significant.	*61 application will be made to the relevant Local Planning Authority"* secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. An assessment for the use of every haul route was not undertaken, however the worst-case use of such construction haul routes (or access points) has been undertaken and determined to be not significant (see paragraphs 21.9.63 to 21.9.66, **Chapter 21 Noise and vibration, Volume 2** of the Environmental Statement (ES) **[PEPD-018]**. vii) Night-time noise effects are covered by more stringent thresholds of significance than daytime works, and therefore, works that are needed at night will usually have more mitigation built in from the outset. Again, it is important to draw attention to the temporal threshold, such that the exceedance of the thresholds of significance does not itself constitute a significant effect. Use of temporary barriers for acoustic screening is a standard industry approach and is demonstrably an appropriate mitigation solution. If there are circumstances that arise that mean that any mitigation is insufficient, there are measures in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** and the **Commitment Register** **[APP-254]** (updated at Deadline 1 submission) to address this. The **Outline CoCP** **[PEDP-033]** is secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. viii) Construction working hours are outlined within the **Outline CoCP** **[PEPD-033]** (and updated at Deadline 1) and are governed by Requirement 22 (5)(c) of the **Draft Development Consent Order** **[PEPD-009]**. Any works required to be undertaken under such provision will be carefully planned to ensure that significant noise effects are avoided. ix) Although the initial estimate of impact with respect to BS4142 considers a 5dB difference between the rating level and representative background level as being indicative of an adverse impact, the standard requires that the assessor considers the context of the assessment of the new noise source in its environment. As such, the operational noise levels have been considered alongside the presence of low background noise levels and have considered both absolute and relative noise levels compared to the observable adverse effect levels at night-time. Recommendations have been made to reduce the sound level below the Lowest Observable Adverse Effect Level (LOAEL) at all receptors, and therefore the conclusions of no significant effects are considered by the Applicant to align with the requirements of BS4142 and EIA.
2.3.22	*Mitigation, Compensation and Enhancement* x. Considerable reliance has been placed on 'embedded measures' set out in the Commitments Register, all to be captured as part of stage-specific CoCPs (C-33). Whilst such measures may well help to reduce noise, the extent to which they can reduce noise levels is uncertain at this stage (noting measures will be adopted 'where practicable' in many cases and that the Noise and Vibration Management Plan (NVMP) will be 'updated'). Only noise mitigation measures where specified attenuation levels can be confidently established/applied should be considered at this stage: 2.1 There is considerable concern about the reliance of stage specific NVMPs to be provided as part of CoCPs. Although such NVMPs will be vital in specifying appropriate noise controls for each stage, the extent to which they can reduce noise levels is uncertain at this stage. In this regard, it is concerning that the relevant commitment (C-263) states "*Where any significant deviation from the initial sound level predictions is identified, such that levels in excess of the BS 5228 thresholds of*	x. No significant impacts are identified as the potential for such impacts has been removed by design i.e., routing of the linear aspects of the works, and the choice of embedded mitigation. Considerable reliance is placed on embedded measures because such measures are demonstrably effective. a. Assessments are made on the basis of information provided by the Applicant's engineers and of experience of similar infrastructure construction. Mitigation recommendations are made on experience of demonstrable acoustic reductions in situ such that the Applicant has confidence that what has been assessed and recommended are appropriate and fit for purpose. It is recognised that there will be occasions where individual circumstances mean that what was assessed is needed to be amended when the Contractor reviews the assessments and proposals and that is why the commitment C-263 exists and is secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**, i.e. so any changes are captured and reassessed and resubmitted for comment to the relevant Local Planning Authorities and minimise the risk of significant effects. b. Although the initial estimate of impact with respect to BS4142 considers a 5dB difference between the rating level and representative background level as being indicative of an adverse impact, the standard requires that the assessor considers the context of the assessment of the new noise source in its

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	significance are likely, the NVMP shall be updated or a Section 61 application will be made to the relevant Local Planning Authority". It is concerning that noise levels above ES predictions will only be addressed by subsequent review, at which point it is only likely to be able minimise noise levels rather than address any potential significant impacts. 2.2 Rating levels applied at the Oakendene substation (C-231) are considered too high and at a level where adverse impacts may be expected. Further, although an operational noise management plan (NMP) is to be secured through the dDCO, no draft NMP has been provided and it is unclear how or if lessons learnt from Rampion 1 will be incorporated. 2.3 Stage-specific construction Noise Management Plans (NVMP) will be produced; however, no drafts have been provided to date, leaving uncertainty as to the mitigation measures which may be possible in individual circumstances.	environment. As such, the operational noise levels have been considered alongside the presence of low background noise levels and have considered both absolute and relative noise levels compared to the observable adverse effect levels at night-time. Recommendations have been made to reduce the sound level below the Lowest Observable Adverse Effect Level (LOAEL) at all receptors, and therefore the conclusions of no significant effects are considered by the Applicant to align with the requirements of BS4142 and EIA. c. As outlined in Commitment C-263 of the **Commitments Register** **[APP-254]** secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]** (which has been updated at Deadline 1), during detailed design the appointed contractor will review the construction noise assessments and where any significant deviation from the initial sound level predictions is identified, such that levels in excess of the BS5228-1, the Noise and Vibration Management Plan (NVMP) shall identify the necessary mitigation to avoid this. If necessary, a Section 61 application will be made to the relevant Local Planning Authority. Mitigation proposed in such documents will follow the guidelines as set out in BS5228-1, the code of practice for construction noise and shall be drafted to align the construction works with Best Practicable Means (BPM). As the NVMPs will be stage specific, they require input from the contractors undertaking the work to avoid the imposition of impractical recommendations and will also be approved by the relevant local planning authority in consultation with other stakeholders.
2.3.23	**Ecology and Nature Conservation** 3.10 The key ecological impacts, which are associated with the construction phase, are habitat loss, habitat fragmentation and disturbance to species. The Project is reliant on a package of avoidance, mitigation, compensation and enhancement measures to address the ecological impacts. Adoption of the embedded environmental measures in the commitments register will help minimise adverse impacts. Successful and rapid reinstatement of habitats, and landscape features, along the cable corridor and at the temporary construction compounds will be key; this will require appropriate management and monitoring, plus timely remedial works, as necessary. In seeking to achieve compensatory habitat and BNG off-site, the Applicant will need to demonstrate that this is achievable and that it will deliver greater nature conservation benefits. The proposal for advance habitat creation is welcome but lacking in detail. *Assessment Methodology* i. Although the Vegetation Retention Plans for hedgerows, tree lines, woodland, scrub and grasslands are very helpful, there do not appear to be any such plans for ponds and watercourses. ii. It is proposed to re-instate habitats along the cable corridor and at the temporary construction compounds to their current condition. Concern is raised that enhancement opportunities may not be realised. iii. WSCC has concerns about the success of hedgerow 'notching', a technique that could be affected by soil type and drought. Any	The Applicant agrees with the summary of effects and welcomes the acknowledgement that the adoption of environmental measures in the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) will help minimise adverse effects. Regarding the request for successful and rapid reinstatement, the mitigation for individual ecological features / impacts is adequately secured. The **Draft Development Consent Order** **[PEPD-009]** includes Requirement 12 securing mitigation through provision of reinstatement or landscaping, Requirement 13 with regards timing and maintenance and Requirement 14 securing mitigation, compensation and Biodiversity Net Gain (BNG). Requirement 12 ensures that a Landscape and Ecological Management Plan is provided for agreement with the relevant planning authority and Natural England. Requirement 13 ensures that the Landscape and Ecological Management Plan is delivered as agreed, whilst Requirement 14 secures the agreement and implementation of a BNG strategy. Requirement 22 ensures that a stage specific Code of Construction Practice is submitted and approved by the relevant planning authority in consultation with the Environment Agency, the statutory nature conservation body, the highway authority and the lead local flood authority. Individual commitments also add further impetus to deliver successful restoration. This includes Commitment C-103 that allows for a time limit for habitat restoration across the majority of the construction area (excluding temporary construction compounds, cable joint bays the landfall and the onshore substation location), whilst commitment C-115 minimises habitat loss of hedgerows and tree lines and proposes ways in which the reinstatement can take place. Commitment C-199 provides for the long-term management and monitoring of reinstated habitats. These commitments are secured through the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** and **Outline Landscape and Ecology Management Plan** **[APP-232]** which are in turn secured through Requirements 12, 13 and 22 of the **Draft Development Consent Order** **[PEPD-009]**. There is a large number of biodiversity units available for purchase within West Sussex currently including those delivering grassland, woodland, scrub, coastal and floodplain grazing marsh and hedgerows. This is demonstrated on the websites of various projects / market places such as:

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	necessary remedial works, such as re-stocking, must be implemented as soon as possible. iv. There is a lack of detail relating to the pedestrian monitoring of the HDD drill head as it passes beneath ancient woodland. Impacts on the ground flora and shrub layer must be minimised. It is requested that an Ecological Clerk of Works is present. v. Further ecological guidance will be required on the content of stage specific Code of Construction Practice (CoCP) and stage specific Landscape and Ecology Management Plan (LEMP). The outline version of the latter should include advance planting, habitats to be reinstated, planting specifications and programme, maintenance and monitoring specifications.	1. The Weald to Waves Project showing opportunities around Climping / Lyminster, within the South Downs National Park (to the south and south-east of Washington); 2. The Gaia market place lists eight projects in the South Downs National Park and one in Mid-Sussex; and 3. The land agent Savills shows one project in Arun District and three in South Downs National Park. It is acknowledged that some of the opportunities may be listed on more than one of these websites and locations are vague given commercial sensitivities, however it does demonstrate that there is a plethora of opportunities alongside those that may be leveraged from affected landowners. The delivery of biodiversity net gain will follow the process laid out in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES [**APP-193**] which is secured via Requirement 14 of the **Draft Development Consent Order** **[PEPD-009]**. Regarding comments on the 'Assessment Methodology': The Vegetation Retention Plans in Appendix B of the **Outline Code of Construction Practice** **[PEPD-033]** have been updated for submission at Pre-Examination Procedural Deadline A (16 January 2024). Appendix B has been updated to include plans showing ponds for clarity, these were omitted previously as all 17 within the proposed DCO Order Limits are retained. The watercourse crossings (including the type of crossing) are provided in the **Appendix 4.2: Crossing schedule, Volume 4** of the ES **[APP-122]**. Reinstatement of habitat to current condition has been assumed as a realistic worst-case scenario. This is because without a detailed design agreeing to any enhancements with any given landowner would be difficult. It is also apparent that any agreement would necessarily have to be wider than the reinstatement in many instances due to the scale in any particular location (e.g. there is limited benefit to enhancing a short section of hedgerow (e.g. 6m) only). **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** allows for discussion with landowners in the first instance to deliver enhancements, compensation and gain (through the calculation of Biodiversity Net Gain (BNG) using the Biodiversity Metric). It is understood by the Applicant that some landowners will not want to deliver enhancements for biodiversity on their land due to current use (e.g. losing harvestable area) and therefore the **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** provides a hierarchy of choices on how to deliver biodiversity units. The realistic worst-case scenario assessed within **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]** is based on hedgerow notches being cut to the ground, roots excavated and discarded, soil replaced and new planting. This is a typical approach to linear projects, other than here the proposal is for multiple smaller notches as opposed to a single large gap. It is expected that replanting would be successful through the implementation of stage specific Code of Construction Practice CoCP) and stage specific Landscape and Ecological Management Plan (LEMP) secured and via Requirements 12,13 and 22 of the **Draft Development Consent Order** **[PEPD-009]**. The second part of Commitment C-115 (**Commitments Register** **[APP-254]**) has been updated for Deadline 1 to state that '*Hedgerows subject to temporary translocation will be lifted using a tree spade to maintain diversity and structure and result in more rapid reinstatement. Where chances of success are questionable, notches will be made by removal and reinstatement through planting. The ECoW will justify the approach being taken in line with the responsibilities of implementing the vegetation retention plan (see C-220).*'. This means where chances of success are low then this option will not be exercised and instead a typical approach of re-planting will be specified. This will necessarily be described within the reinstatement measures in the Landscape and Ecological Management Plan. In locations where temporary translocation is appropriate (e.g. soils that are at

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		least 60cm deep and support vegetation that does not appear to be drought stressed) translocated hedgerows would be subject to regular aftercare. Where it appeared that translocated sections are failing new planting would be established along the line of the translocated section (on both sides). These plantings would develop into the hedge with the failed / partially failed translocated section providing a matrix to develop around. The Applicant recognises that the translocation of hedgerow will have more chance of failure than replanting using whips. The translocation has been provided as an option to maintain character and provide more rapid gapping up. However, should this option not be considered relevant then the relevant local authority and Natural England will have the opportunity to request translocation is not used at any given location through approval of the stage specific LEMP and stage specific CoCP in accordance the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** and **Outline Landscape and Ecology Management Plan** **[APP-232]** which are in turn secured through Requirements 12, 13 and 22 of the **Draft Development Consent Order** **[PEPD-009]**. It should be noted that this approach (temporary translocation and replacement of hedgerows) was considered acceptable in the consented Brechfa Forest Connection project (see paragraph 5.2.99 and Requirement 28 of the Examining Authority's Report of Findings and Conclusions to the Secretary of State for Energy and Climate Change (Planning Inspectorate, 2016). The pedestrian monitoring of the progress of the horizontal directional drill (HDD) (including beneath Ancient Woodland) is non-intrusive with personnel utilising hand-held equipment. Commitment C-207 provides for an Ecological Clerk of Works (EcoW) within the **Outline CoCP** **[PEPD-033]** which is secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. The EcoW would be expected to be in place for any works that involve sensitive ecological features such as HDD crossings of Sites of Special Scientific Interest, ancient woodland or Local Wildlife Sites. The Applicant agrees that the detail in the Code of Construction Practice (CoCP) and the Landscape and Ecological Management Plan (LEMP) will need to be stage and location specific and provide information on scheduling (including advance planting), establishment, management and monitoring. Stage specific LEMPs and CoCPs are secured through Requirement 12 and 22 of the **Draft Development Consent Order** **[PEPD-009]**.
2.3.24	*Assessment of Effects* iv. The key ecological impacts are associated with the construction phase. They are habitat loss (including broadleaved semi-natural woodland, hedgerow and semi-improved grassland), habitat fragmentation (with consequent reduction in ecological connectivity) and disturbance to species (such as from noise and lighting). Habitat reinstatement may take many years to achieve.	The Applicant agrees with the characterisation of the effects associated with the construction phase. Habitat reinstatement will take time to reach target condition (e.g. as trees / hedgerows will take time to grow and mature) but Commitment C-103 of the **Commitments Register** **[APP-254]** presented in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]** does ensure that in the majority of locations (other than at temporary construction compounds, landfall, substation and cable joint bays) the reinstatement of habitats will begin within two years (e.g. saplings planted). The time for woodland, and other habitats, to become ecologically functional is accounted for within the way the Statutory Biodiversity Metric calculates Biodiversity Net Gain (i.e. temporal risk discounts the value of the proposed habitat) as described in **Appendix 22.15 Biodiversity Net Gain Information** [**APP-193**]. Biodiversity Net Gain is secured through requirement 14 of the **Draft DCO [PEPD-009]**.
2.3.25	*Mitigation, Compensation and Enhancement* v. In order to address the presented ecological impacts, the Project is reliant on a range of avoidance, mitigation, compensation and enhancement measures, including off-site compensation. Further enhancements are proposed to achieve 10% BNG. There is a lack of clarity	Avoidance measures have evolved through the design process and are demonstrated by both the shape and location of the proposed DCO Order Limits (for example, where possible it has been drawn to exclude various ecological features including areas of ancient woodland and areas of Priority Habitat) and through the Vegetation Retention Plan that is appended to the **Outline Code of Construction** **Practice [PEPD-033]**. Further measures of avoidance are provided in **Commitments Register** **[APP-254]** (provided at Deadline 1

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	on the distinction between what constitutes essential mitigation and compensation, and BNG. Concern is raised about the delivery of off-site habitat compensation and enhancement, including how it will be secured. vi. There is considerable uncertainty about the severity and duration of short-term adverse impacts, such as habitat fragmentation associated with the loss of hedgerows and woodlands, and the success of subsequent restoration. Effective mitigation measures (such as timing of the works, micro-siting of the ducts and hedgerow 'notching'), advance habitat creation and rapid, and successful reinstatement, will be essential to lessen the impacts on biodiversity. Additional compensation may be required. vii. Concern is raised about the lack of information on advance habitat creation, including locations, specifications, how it will be secured and timescales. Advance habitat creation, to be implemented before and during the early stages of construction, is a key component to reduce biodiversity impacts to an acceptable level. viii. In seeking to achieve the majority of BNG off-site, the Project must prove that this is achievable and that it will deliver greater nature conservation benefits.	submission) and include those that describe construction scheduling such as commitment C-21 (avoidance of active nests of reeding birds during vegetation clearance), C-112 and C-114 (avoidance of physical effects within Site of Special Scientific Interest (SSSI) and Local Wildlife Site (LWS)), C-117 (avoidance of disturbing activity during the coldest winter months), C-174 (avoidance of veteran trees), C-203 (avoidance of disturbance / damage to active nests of ground nesting birds) and C-215 (avoidance of disturbing activities close to occupied barn owl boxes). Mitigation measures to lessen the effects on biodiversity include: • specification of trenchless techniques to cross main rivers, SSSI, LWS and ancient woodland (C-112, C-114 and C-216); • implementation of wildlife sensitive lighting design (C-105); • implementation of speed restrictions to avoid collisions with wildlife (C-106); • implementation of biosecurity measures (C-107); • measures to minimise disruption to watercourses and maintain fish passage (C-64, C-205 and C-229); • reinstatement of temporary habitat loss within two years (C-103); • measures to reduce hedgerow loss (C-115 and C-224); • imposition of stand-off distances to watercourses (C-135); • reduction in woodland loss (C-204); and • pre-construction survey programme to implement appropriate mitigation based on latest distribution (C-203, C-209, C-210, C-211, C-214 and C-232). The **Outline Landscape and Ecological Management Plan [APP-232]** secured through Requirements 12 and 13 of the **Draft Development Consent Order [PEPD-009]** also describes mitigation and compensation measures at the onshore substation site and grid connection point in terms of providing advanced planting to maintain connectivity and buffer disturbance and compensation in the form of habitat creation. This document will be updated at a future deadline to include further detail regarding advanced planting, monitoring, management and remedial works as discussed with WSCC during post-DCO Application meetings. The severity and duration of short-term effects is addressed in section 22.9 of **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES [**APP-063**]. It should be acknowledged that, in any given locale, the extent of the effects on habitats such as hedgerow is limited and being carried in out such a way as to minimise loss and minimise potential for fragmentation. Disturbance in any given location will be short term, with activity confined to bursts of activity associated with individual tasks (e.g. cable duct installation, cable pulling, haul road removal and reinstatement). Compensation (to reach a point of no net loss as calculated within the Biodiversity Metric) and biodiversity net gain (BNG) will be provided either through working with affected land owners or by purchase of biodiversity units from strategic schemes or habitat banks. This could be both at a small scale (e.g. agreeing additional tree planting or hedgerow gapping up) or at a larger scale (e.g. woodland or grassland creation or enhancement). The latter would be secured in the same way as those development projects delivering mandatory BNG via the Environment Act 2021 by way of planning agreement or conservation covenant. Ensuring that all steps of the

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		guidance are followed provides comfort that appropriate steps will be taken to ensure suitable habitat creation and enhancement work is backed up by robust management and monitoring to deliver the necessary biodiversity units. It should be noted that when discussing provision of biodiversity units that they could be delivered within the proposed DCO Order Limits should suitable arrangements with landowners be made during the detailed design phase. The types of biodiversity units to be purchased will reflect the needs of the Proposed Development (e.g. ensure that the trading rules within the metric are met) thereby delivering habitats known to be present and functioning within the locality. Further information on BNG is provided in **Appendix 22.15: Biodiversity Gain Information, Volume 4** of the ES **[APP-193]** which also provides Natural England and West Sussex County Council (WSCC) with the opportunity to review and approve the units purchased.
2.3.26	**Arboriculture** 3.11 The Project proposes adequate mitigation and compensation strategies to limit impacts to arboricultural features where avoidance has not been possible. However, multiple anomalies were found within information supplied in relation to hedgerows, which remains of concern and will need addressing by the Applicant going forward. Proposed landscaping for the Oakendene substation is not supported due to the impacts proposed on notable trees and hedgerows of historical relevance and limited landscape design proposed; similarly, better connectivity between green corridors was expected at the extension proposals at Bolney Substation. The Outline-LEMP negates enhancement opportunities. Of principle concern is the loss of trees reaching near veteran status and lack of protection measures to secure their retention. *Assessment Methodology* i. Although appropriate baseline information is supplied within the chapter and has derived from a number of surveys, including hedgerow and arboricultural surveys in accordance with best practice or recognised methodology, surveying is required for both hedgerows and trees where it has not yet been possible to undertake them (and valuable trees, as well as veteran trees, should be avoided or mitigated for). ii. The methodology for potential veteran trees only considers their biodiversity value in context with the definition within NPPF (pg. 65). Cultural or heritage value has not been demonstrated on tree lines to be removed (notably those within the Oakendene substation).	The Applicant is happy to engage with West Sussex County Council (WSCC) to review any identified anomalies in relation to the treatment of hedgerows, noting that there has already been constructive meetings to discuss. The updated **Outline Code of Construction Practice** **[PEPD-033]** and the **Tree Preservation Order and Hedgerow Plan** **[PEPD-007]** were submitted at the Pre-Examination Procedural Deadline A on 16 January 2024 following these meetings and a review of the documents. Further updates are proposed following points raised at the Issue Specific Hearing 1 in February 2024. Figure 1 of the **Outline Landscape and Ecology Management Plan** **[APP-232]** presents one possible arrangement of landscaping around the proposed onshore substation at Oakendene, with the aim of creating variable habitat types that complement the existing landscape character and incorporate Sustainable Urban Drainage. Compensation for tree and hedgerow loss will also be provided through the delivery of off-site measures described in **Appendix 22.15 Biodiversity Net Gain Information, Volume 4** of the Environmental Statement (ES) **[APP-193]**. BNG is secured in Requirements 14 of the **Draft Development Consent Order [PEPD-009]**. A calculation rate for the replacement of individual trees to be removed is presented as a function of their current stem size within the **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]** and secured by Commitment C-286 of the **Commitment Register** **[APP-254]** (updated at Deadline 1 submission). In this way the amount of replacement planting would respond to the scale of impact and mean that up to 14 new trees would be provided for the loss of a single tree at the onshore substation at Oakendene in some instances. The full extent of replacement planting has not yet been designed but will be incorporated into future landscape plans based on a detailed design. Measures to mitigate the loss and disturbance of the features and niche habitats that contribute to the 'approaching veteran status' of several of the trees are also embedded into the scheme. Section 8.6 of the **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]** describes a hierarchy of options that minimises both the displacement and processing of arisings (cut timber and vegetation). Through the implementation of this hierarchy, features of habitat value on felled trees would be retained intact and would be relocated to the nearest suitable location. It would also be possible to simulate the existing habitat arrangement and conditions in some instances, for example by installing cut timber at the same orientation and/or height as it is currently growing. This information will be presented as part of a set of stage specific Arboricultural Method Statements at the detailed design stage in accordance with commitment C-282 of the **Commitments Register** **[APP-254]** and ensured by the Ecological Clerk of Works under commitment C-207 (secured via Requirements 22 and 23 of the **Draft Development Consent Order** [**PEPD-009**].

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		The ability to deliver augmentation and increased connectivity of tree and woodland habitat around the existing National Grid Bolney substation will be dependent on landowner agreement. Without a detailed design, agreeing to any enhancements with any given landowner will be difficult. This will involve discussion with landowners around the existing National Grid Bolney substation at the detailed design stage. The 19 trees and 622m of hedgerow proposed for removal to construct the onshore substation at Oakendene all lie directly within its footprint. Their loss is consequently unavoidable and there are no available temporary or permanent protection measures that could be implemented to change this effect. As stated in paragraph 4.4.2 of the **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]**, survey detail will be required for all trees and hedgerows that were inaccessible during the preparation of the Arboricultural Impact Assessment (AIA) to inform a detailed design and the Applicant is committed to providing it at this time. A historic landscape assessment of the historic parkland at Oakendene was requested by WSCC during the non-statutory consultation exercise held between 14 January and 11 February 2021. The assessment was undertaken in line with WSCC Archaeologist on 05 October 2022, and is presented in **Appendix 25.5: Oakendene parkland: historic landscape assessment, Volume 4** of the ES **[APP-211]**. This exercise informed the design process and the assessment of effects presented in **Chapter 25: Historic environment, Volume 2** of the ES **[APP-066]**. The assessment of veteran trees in the **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]** considered the cultural and heritage value, insofar as the information provided in the **Appendix 25.8**: **Onshore Heritage Asset Baseline Report**, **Volume 4** of the ES **[APP-214]** but found insufficient evidence to conclude exceptional cultural or heritage value in any trees included in the survey. There is no prescribed or standardised method for the assessment of cultural or heritage value in trees and it is inherently more difficult to assess these consistently than physical habitats, which can be viewed and counted. The trees at the onshore substation at Oakendene are within the parkland at Oakendene Manor. The presence of these trees discussed in general within the **Appendix 25.8**: **Onshore Heritage Asset Baseline Report**, **Volume 4** of the ES **[APP-214]**, but none of those included in the tree survey are specifically referenced, or identified as particularly having or contributing to heritage, which would be a possible justification for veteran classification on these grounds. It is the Applicants view that these trees, and others included in the tree survey, have some heritage and/or cultural value because of their association with a known heritage assets, but this is insufficient to qualify them as veterans under the National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government (MHCLG), 2021) definition, which requires *exceptional* value.
2.3.27	*Assessment of Effects* iii. Effects are considered to be appropriate for arboricultural-related receptors, including ancient woodland, veteran trees and woodland. However, the assessment of native hedgerows is of concern as 'important' hedgerows differ between documents and plans; the findings presented are of low confidence as a result. Worst-case scenarios are applied, though reference is made to mitigation measures, which are likely to reduce the findings further throughout detailed design and project delivery.	The **Tree Preservation Order and Hedgerow Plan** **[PEPD-007]** shows important hedgerows that are identified in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]** and **Appendix 25.2: Onshore historic environment desk study Part 1 of 2, Volume 4** of the ES **[APP-200]**. This has led to some confusion as a consolidated list of important hedgerows was not provided in a single location. The **Tree Preservation Order and Hedgerows Plan** **[PEPD-007]** and Figure 7.2.1 of the **Outline Code of Construction Practice** **[APP-224]** have also been reviewed and a small number of discrepancies identified. These were corrected and provided in advance of the Examination. A further request to review vegetation losses and align documents was made at the Issue Specific Hearing 1 in February 2024 (Action Point 24). This is being undertaken and any updates provided at a later deadline.

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2.3.28	*Mitigation, Compensation and Enhancement* iv. Environmental mitigation measures have been adopted to aid considerate design of the project resulting in minimised likely effects to arboricultural receptors; further, proposed mitigation measures to protect trees as appropriate are also outlined. Although the mitigation technique of 'notching' is welcomed, there is a lack of methodology, aftercare and assessment of suitability. v. Although a strategy for the compensation of arboricultural loss is proposed, which proportionately reflects the loss of arboricultural features, the landscape design strategy for tree planting is not clear (replacing removed landscape features trees contribute to should be considered). vi. The majority of the proposed planting is expected to be planted within the DCO limits. Where this is not possible and offsite planting is required to provide essential compensation, it is considered that a planning obligation should require the submission of such detail to the responsible LPA. vii. The OLEMP provides no enhancements to arboricultural features; this is disappointing given the scale of the project and significant findings of worst-case design scenarios. Landscape proposals for both the Oakendene Substation and the extension proposals at Bolney Substation, lack proportionate and appropriate landscape design to compensate hedgerow and tree loss.	Removal of trees and hedgerows must be undertaken in accordance with the Vegetation Retention Plans in **Appendix B** of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** which limits the maximum length to be lost. This is in accordance with commitment C-115 (see the **Outline CoCP** **[PEPD-033]** and **Commitments Register** **[APP-254]** updated for Deadline 1 submission and is secured though Requirement 22 of the **Draft DCO** **[PEPD-009])**. This commits to minimising loss by notching hedgerows and treelines wherever possible, which is the removal of a shorter section of hedgerow or treeline compared to the construction corridor width. The creation of notches, under a realistic worst-case scenario, is based on vegetation being cut to the ground and the roots excavated and discarded as necessary. This is a typical approach to linear projects, other than that there would be multiple smaller notches as opposed to a single large gap where possible. The **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]** also states that '*the ability to successfully implement 'notching' will be assessed on a case-by-case basis as part of further survey to support the development of a detailed design. This will include mapping of the individual component trees within hedges and groups to allow tree removal and retention around notches to be shown on the final tree removal plans with a higher resolution than exists in this assessment.'* This information will be presented as part of a set of stage specific Arboricultural Method Statements at the detailed design stage in accordance with Commitment C-282. The methodology for notching will be described and controlled through a stage specific Code of Construction Practice via Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]** and any required aftercare for reinstated hedgerows and treelines will be detailed within a Landscape and Ecological Management Plan in accordance with Commitment C-286 and Requirements 12 and 13 of the **Draft Development Consent Order** **[PEPD-009]**. The Applicant agrees that the contribution existing trees make to removed landscape features should be a key consideration of any proposed replacement planting proposals. Section 8.5 of the **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]** establishes the principle that '*the design of replacement tree, group and woodland planting will aim to replace or recreate the benefits provided by trees that were removed*.' It provides guidance on suitable species selection based the primary qualities (arboricultural, landscape or habitat) that will be adopted during detailed planting plan design. The use of tree species that are characteristic of the area also forms a part of Commitments C-193. This is secured through Requirements 12 and 13 of the **Draft Development Consent Order** **[PEPD-009]** with reference to a stage specific Landscape and Ecology Management Plan. Arboricultural offsetting and enhancement measures (quantum of proposed tree planting) are described in the **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]**. Planting plans would be produced in response to a detailed design according to the planting location hierarchy provided in the AIA. The landscaping proposals presented at Figure 1 and Figure 2 of the **Outline Landscape and Ecology Management Plan (LEMP)** **[APP-232]** presents one possible arrangement of landscaping around the onshore substation at Oakendene and existing National Grid Bolney substation. The designs are preliminary in nature and will evolve in response to a detailed design. It is however, not intended that this is the sole provision of off-setting or enhancement measures that will be delivered in response to tree and hedgerow loss. A calculation rate for the replacement of individual trees to be removed is presented as a function of their current stem size within the **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]** and secured by commitment C-286 of the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) detailed in the **Outline LEMP** **[APP-232]** secured through Requirement 12 of the **Draft Development Consent Order** **[PEPD-009]**. In this way the amount of replacement planting will respond to the scale of impact and mean that up to 14 new trees will be provided for the loss of a single tree at in some instances. Groups of trees and woodland will also be replanted at a higher area ratio than that being removed depending on the median stem size and at least an equal length of hedgerow to that being removed would be planted. These measures have

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		been designed to ensure that there is no net loss of arboricultural value in the longer term and no permanent degradation of the treescape at the onshore substation at Oakendene but also across the entire Proposed Development. The Applicant has provided an indicative layout of the habitats to be established on-site at the onshore substation location and at the extension of the existing National Grid Bolney substation. The exact nature and scale of these will need to be flexible at this stage as the design will inevitably change to accommodate the installed number of turbines / turbine capacity / types of transmission cable etc. As the final Landscape and Ecological Management Plan will be agreed with the relevant planning authority before being implemented the Applicant considers there is adequate opportunity to influence the design post-DCO consent. For off-site habitat creation this will not be known until detailed design has highlighted the quantity and type of biodiversity units required. It is noted in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** that 70% of the biodiversity units required will be delivered ahead of the commencement of construction for each stage of the delivery (e.g. based on stage specific detailed design). The ability to deliver enhancement planting beyond the proposed DCO Order Limits is dependent on landowner agreement. Without a detailed design, agreeing to any enhancements with any given landowner would be difficult. The **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** allows for discussion with landowners in the first instance to deliver enhancements, compensation and gain (through the calculation of biodiversity net gain (BNG) using the Biodiversity Metric 4.0 (Natural England and Other Parties, 2023)) which will involve tree and hedgerow planting. It is the Applicant's intention to discuss the potential delivery of new or enhanced habitats once detailed design has identified the losses which are expected to be less than those assessed within the **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]**.
2.3.29	**Traffic and Transport** 3.12 The focus of this representation is on the traffic and transport implications of the onshore elements of the proposals (specifically the construction of the cable route and associated works, as well as permanent works including the Oakendene substation and vehicle accesses) on the West Sussex transport network. *Assessment Methodology* i. The assessment has been undertaken in accordance with rescinded and replaced guidance from IEMA, Guidelines for Environmental Impact Assessment of Road Traffic (1993). This was replaced in July 2023 by Environmental Assessment of Traffic and Movement. The ES should be reviewed against the latest guidance and as necessary amended. ii. WSCC is content with the base data used within the assessment. This data includes traffic surveys of all routes that will be used by construction traffic.	3.12i. Use of the Guidelines for the Assessment of Road Traffic (1993) was defined within the Applicant's request for an EIA Scoping Opinion submitted to the Planning Inspectorate on 2 July 2020 and following consultation with WSCC prior to the DCO Application being submitted. At the time of writing the Environmental Statement **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** in early 2023 the new Institute of Environmental Management and Assessment (IEMA) (2023) Guidance Environmental Assessment of Road Traffic and Movement (July 2023) had not been published. The Applicant will provide a note on the principal differences between the 1993 and 2023 Institute of Environmental Management and Assessment's (IEMA) Traffic Assessment Guidance (IEMA, 1993; 2023) documents and whether there would be difference in the outcome of the assessment if the latter was used at the Deadline 2 submission. 3.12ii. The Applicant welcomes West Sussex County Council's (WSCC) agreement on the base data used within the assessment and that it includes traffic surveys of all routes to be utilised by construction traffic.
2.3.30	*Assessment of Effects* iii. For the purposes of the transport network, it is acknowledged that most effects will occur during the construction phase and, as such, will be temporary in nature (albeit for an approximately four-year period). Once	3.12iii. The Applicant has entered into discussions with West Sussex County Council (WSCC) regarding the design requirements for key permanent access junctions, including the onshore substation at Oakendene, with a view of reaching an agreement in principle on the proposals before the end of the Examination.

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	operational, traffic impacts will be minimal. Details of permanent, operational accesses, including that serving the onshore substation, are yet to be agreed with WSCC. iv. There remain areas of concern relating to transport matters as presented in the DCO submission documents. These relate primarily to construction phase impacts on the West Sussex transport network, and the concern about the measures outlined in the OCTMP (APP-228).	3.12iv. The **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** includes mitigation measures to limit the effects of construction traffic associated with the Proposed Development. The Applicant will continue to discuss construction phase effects with WSCC with a view of resolving areas of concern prior to the end of the DCO Examination.
2.3.31	*Mitigation, Compensation and Enhancement* v. The focus of the highway assessment provided by the Applicant is on the construction phase, which has been accepted by WSCC given the anticipated increase in traffic flows during this time compared with the operational phase. Although an OCTMP has been submitted by the Applicant to provide mitigation during construction, there are a number of concerns, including: a. Those relating to the physical construction access arrangements, including the overall number of accesses and the ability to achieve necessary visibility splays at identified accesses (including those to the main construction compounds); b. Areas where additional mitigation is necessary, including the provision of road safety audits and the management of traffic on single track roads; and c. Aspects where clarification is required or where information appears to be missing from the submitted information. This includes numbered accesses being missing or construction vehicle trips being absent from tables within the OCTMP. vi. Some minor comments are made in respects of measures within the Outline Operational Travel Plan (OOTP) (APP-227). vii. In reviewing the submitted information, it is acknowledged that some construction traffic will route through the Air Quality Management Area (AQMA) in Cowfold. For the purposes of traffic routing, this traffic will make use of A-classed roads (the A281, which runs north to south, and the A272, which runs east to west). Notwithstanding the AQMA, in light of their classification, these roads are appropriate for construction traffic. Further mitigation measures will nevertheless be expected for the purposes of managing traffic through the AQMA and Cowfold itself, and WSCC expects this traffic to be reduced to the minimum where possible. viii. Mitigation will need to be agreed for the end-of-life decommissioning. A commitment should be secured as part of the DCO requiring a decommissioning construction traffic management plan to be submitted and agreed with WSCC. This CTMP should be provided and agreed prior to decommissioning works commencing.	The **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** includes mitigation measures to limit the effects of construction traffic associated with the Proposed Development. The Applicant will continue to discuss construction phase effects with West Sussex County Council (WSCC) with a view of resolving areas of concern prior to the end of the Examination. In addition, the Applicant provides the following responses to the specific points made by WSCC: a. Section 4.4 of the **Outline CTMP** **[PEPD-035a]** provides details of visibility splay requirements for construction access junctions. Where it is proposed to use an existing farm gate accesses or farm tracks a visibility splay in accordance with Design Manual for Roads and Bridges will be provided by coppicing. Where this is not possible (for example due to ecological reasons) these accesses will be managed through traffic management. Further to this, the Applicant is also in discussion with WSCC on the visibility splays requirements at key accesses, with speed surveys being completed to inform visibility splay requirements. These speed surveys will be used to inform the requirements set out in the **Outline CTMP** **[PEPD-035a]** and access designs where these are being undertaken. b. The Applicant is in discussion with WSCC on the requirements for Road Safety Audits and management of single-track roads. The Applicant will continue to discuss construction phase effects with WSCC with a view of resolving areas of concern prior to the end of the examination. c. An updated to the **Outline CTMP** **[PEPD-035a]** was submitted at Pre-Examination Procedural Deadline A on 16 January 2024 which corrected these errors. vi. The Applicant will discuss the **Outline Operational Travel Plan** **[APP-227]** with WSCC and will address any WSCC outstanding concerns during the course of the Examination. vii. The **Outline CTMP** **[PEPD-035a]** contains details of required construction traffic routing for the Proposed Development. Where possible HGV traffic has been routed via the A23 and from the east along the A272 avoiding Cowfold. Heavy goods vehicle (HGV) traffic has been minimised as much as possible as detailed paragraph 1.2.5, Commitment C-157 and C-158 **Commitment Register** **[APP-254]**. Further discussions will be held with WSCC to establish appropriate mitigation measures for the Air Quality Management Area (AQMA) and Cowfold for inclusion within the **Outline CTMP** **[PEPD-035a]** secured through Requirements 24 of the **Draft Development Consent Order** **[PEPD-009]**.

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		viii. As stated in the **Outline CTMP** **[PEPD-035a]**. The decommissioning phase is anticipated to involve the removal and reinstatement of the onshore substation site at Oakendene and the existing National Grid Bolney substation extension. The onshore cable will be left in situ during the decommissioning phase. The decommissioning works are likely to be undertaken in reverse to the sequence of construction works and involve similar levels of equipment but much reduced numbers of vehicles for decommissioning. Paragraph 3.81 within the **Outline CTMP** **[PEPD-035a]** states that a decommissioning plan and programme will be developed prior to construction and updated during operation of Proposed Development to account for any changes to decommissioning best-practice and developments in technology. For onshore decommissioning, Requirement 34 within the **Draft Development Consent Order** **[PEPD-009]** secures the provision of an onshore decommissioning plan with must be submitted to and approved by the relevant planning authority.
2.3.32	**Minerals Safeguarding** 3.12WSCC is concerned that proper consideration has not been given to avoiding needless sterilisation of safeguarded minerals. The potential volumes of material that could be recovered are unknown and there are no clear mechanisms in place to secure prior extraction or which demonstrate that prior extraction is not practicable or environmentally feasible. *Assessment Methodology* i. Parts of the cable route are underlain by minerals (building stone, brickmaking clay, and soft sand) that are safeguarded by the West Sussex Joint Minerals Local Plan (JMLP) (July 2018, Partial Review March 2021). The NPS for Energy (EN-1) states that, '*where development has an impact upon a Mineral Safeguarding Area (MSA), appropriate mitigation measures should be put in place…'.* It is important, therefore, that consideration is given to ensuring that minerals are not needlessly sterilised. Of particular importance is soft sand aggregate, a safeguarded resource that is scarce and for which the landbank is below the required seven years (NPPF Para 213e). ii. Chapter 24 of the ES (APP-065) seeks to address the issue of mineral safeguarding and Figure 24.3 shows the cable route crosses the above noted mineral resources. However, the Applicant has not provided a Mineral Resource Assessment, which assesses impacts on safeguarded minerals or addresses the issue of severance of resources.	Due to the location of the relevant Minerals Safeguarding Areas (MSAs), it is not possible for the onshore cable route to avoid the MSAs, however the route proposed for the onshore cable has taken the MSAs into account and minimises the extent of impact on the MSAs by running in as direct a line as possible, or for soft sand, running adjacent to the A283 (an existing constraint to extraction). The onshore cable route therefore avoids needless sterilisation as a first principle. In common with other projects of this nature, ground investigations to determine the precise amounts of mineral have not been undertaken at this stage of the project, and this information would not become available until the construction phase. It is therefore not possible to identify the potential volumes of materials that could be recovered. This information would also be needed in order to identify the quality of material and its possible end-uses, so it is not possible to identify whether prior extraction could be utilised, and if so, how this would take place. It is therefore not possible for the minerals assessment provided in **Chapter 24: Ground conditions, Volume 2** of the ES **[APP-065]** to provide a formal Minerals Resource Assessment, but where required it does provide proper consideration through a robust assessment based on the information available and, where appropriate, considers worst case scenarios for the quantum of minerals affected by the Proposed Development. Assessment methodology i. In line with National Policy Statement EN-1 (DECC, 2011a and DESNZ, 2023) and as noted above, the onshore cable route design avoids needless sterilisation of minerals and in addition, the **Outline Code of Construction Practice (CoCP)** **[APP-224]** commits to producing a Materials Management Plan (MMP) for the project and is secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. Within the MMP there is a commitment that the Plan will "*seek to maximise the reuse of excavated clean materials from the onshore cable construction corridor where practical and feasible*". Due to the level of information that is available on the minerals at this point in time, specifically for soft sand, this currently provides the most robust mitigation available to the Proposed Development. Further information on this matter is provided below in response reference 2.3.34 below. ii. As noted above, a formal Mineral Resource Assessment is not achievable at this point in time, however a robust assessment following both the environmental impact assessment (EIA) methodology and where applicable, the safeguarding policies and guidance available from WSCC has been undertaken. This provides a worst case scenario for the minerals resource which may be sterilised, including the

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		severance of deeper sand deposits for the operational life span of the Proposed Development, and therefore a worst case determination can be made on this issue.
2.3.33	*Assessment of Effects* iii. The assessments for clay and building stone focus on current demand, needs, and quarries in the vicinity, and not the safeguarding of minerals for future generations as intended. The assessments do not provide any quantitative assessment of the amount of mineral that may be sterilised (either directly or through severance). Therefore, WSCC questions whether the assessment of significance of impact for clay and stone has been underplayed. iv. The assessment states that some 1.16 million m^3 of soft sand may be sterilised (para 24.9.47, APP-065), and that the sensitivity of the soft sand resource is 'medium' and during the construction phase, the magnitude of change is 'high' (para 24.9.47 – 24.9.50, APP-065), and that the proposed development will therefore lead to 'major negative' effect, considered to be 'significant' (para 24.10.11 and Table 24-24, APP-065). This is of concern, and this must be recognised in any final assessment of overriding need. V. The assessment states that the impacts will only occur during construction; however, the presence of a cable, and 35m buffer, would mean sterilisation throughout the life of the windfarm. vi. The assessment does not consider the suggestions set out within the West Sussex Mineral Safeguarding guidance, which is referenced in APP-065. The assessment does not provide any details of the likely volumes of material that may be possible to prior extract (given the limited extent and depths of proposed excavations for the cable route), as proposed to be secured by a Materials Management Plan (MMP). Therefore, the effectiveness of any mitigation is unknown at this stage. vii. The Secretary of State (SoS), as the decision maker for the Project, will be required to consider whether there is an overriding need for the Project. Consideration is required to ensure that the mechanisms proposed are sufficient to avoid needless sterilisation.	Assessment of Effects The Applicant notes that the future demands for brick clay and building stone are not readily quantifiable beyond the WSCC Joint Minerals Local Plan (JMLP) period, and as such, has used information from the JMLP to consider the issue of future demand. For Brick Clay, the JMLP states (Paragraph 6.5.5) that national policy requires a 25 year landbank to be maintained, and for a number of sources of clay to be available. At the time of publication, the JMLP identified three clay extraction with over 25 years of reserves, one with 24 years of reserves and one with 10 years of reserves. The 10-year site then had an allocation made for its extension (Policy M11). For brick clay, Section GC-C-08 of the **Chapter 24: Ground conditions, Volume 2** of the ES **[APP-065]** goes on to identify that alongside the permitted reserves for brick clay, there is a substantial safeguarding area available for brick clay. This is well in excess of any of the other mineral safeguarding areas within the county. Although this means that the overlap between the proposed DCO Order Limits and the safeguarding area covers a greater area than for other minerals under consideration, it remains a small proportion of the overall safeguarding resource; estimated at less than 1%. For building stone, the JMLP (Paragraph 6.6.2) states that there were 2.7 million tonnes of permitted sandstone reserves (at the time of publication) and annual sales were in the region of 24,000 tonnes (using 2016 data). The JMLP also identifies (paragraph 6.6.4) that there is no evidence that suggest a need to allocate any additional sites or site extensions to meet the projected demand for sandstone. Section GC-C-08 of the **Chapter 24: Ground conditions, Volume 2** of the ES **[APP-065]** uses the WSCC Minerals and Waste Safeguarding Guidance (2020) to consider Building Stone. This Guidance states that a consideration needs to be made about whether any proposal would lead to a sterilisation of building stone, due to the extent of the safeguarded area and the low level of demand. The low level of demand is shown by there only being four active building stone quarries in the county which produced around 24,000 tonnes per annum, from a permitted reserve of around 2.7 million tonnes in 2016 (WSCC Joint Minerals Local Plan, 2021). Although the Minerals Safeguarded Area for building stone does overlap with the proposed DCO Order Limits, this is not close to any of the existing four quarry sites. It has not been possible to date to obtain shapefile data for the building stone safeguarding area within WSCC, however from reviewing the maps within the WSCC Joint Minerals Local Plan, the building stone MSA is greater than the soft sand safeguarding area. The overlap between the proposed DCO Order Limits and the building stone safeguarding is estimated as being around 11ha. Following the WSCC (2020) Minerals and Waste Safeguarding Guidance, there is evidence of low demand for building stone compared to the extent of both permitted reserves and the safeguarding area identified. It is therefore considered that the assessment undertaken within the EIA, is appropriate for both minerals, and the conclusions drawn of 'not significant' in EIA terms are correct. iii. For soft sand, it is agreed that the worst-case calculation provided within Section GC-0C-08 of **Chapter 24: Ground conditions, Volume 2** of the ES **[APP-065]** shows a potential sterilisation figure of 1.16 million tonnes, and that this would be a significant, negative effect in EIA terms. It is also relevant that this figure is subsequently used within the **Planning Statement** **[APP-036]** when considering the overall need case for the Proposed Development. The Applicant notes that this calculation is based on using the maximum design parameter stated in Table 24-13 of **Chapter 24: Ground conditions, Volume 2** of the ES **[APP-065]** which comprises of a 40m wide onshore cable corridor located within the onshore part of the proposed DCO Order Limits and not the 35m stated in WSCC's Relevant Representation.

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		iv. Within **Chapter 24: Ground conditions, Volume 2** of the ES **[APP-065]**, section GC-O-05 states that the effects identified within section GC-C-08 (that will occur during the construction phase) will also be relevant for the operational phase of the Proposed Development for building stone, brick clay and soft sand and therefore do cover the life of the Proposed Development. v. The assessment within **Chapter 24: Ground conditions, Volume 2** of the ES **[APP-065]**, section GC-C-08, does not contain details of the volumes of material that may be possible to prior extract, as the detailed assessment required to identify these figures are not possible at this point in time. However, the Applicant notes that such work would not change the conclusions in the EIA, given that it would not alter the assessment of effects which are already noted to be Significant. vi. It is agreed that, given the conclusions found in **Chapter 24: Ground conditions, Volume 2** of the ES **[APP-065]** in relation to minerals safeguarding, the Secretary of State will be required to consider these findings in the context of the overriding need case for the Project.
2.3.34	*Mitigation, Compensation, and Enhancement* vii. The Applicant intends to mitigate against mineral sterilisation through the preparation of a MMP that will be produced prior to construction and to be secured through the OcoCP (APP- 224). However, the OcoCP and the information contained within the MMP is limited, with no reference to mineral safeguarding (particularly soft sand), prior extraction, or evidence of discussions with local mineral operators that have the required equipment to process any safeguarded minerals that are extracted. The potential volumes of material that could be recovered are unknown and there are no clear mechanisms in place to secure prior extraction or to demonstrate that prior extraction is not practicable or environmentally feasible.	The **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** submitted with the Environmental Statement commits to a Materials Management Plan (MMP) being produced along with a commitment that the MMP will "*seek to maximise the reuse of excavated clean materials from the onshore cable construction corridor where practical and feasible*". At this point in time, it is not expected that prior extraction of soft sand for off-site sales/use will be practical, as this would leave a substantial void along the cable corridor which will then need infilling with imported materials to allow the cable construction to take place. It is considered that this approach would be unsustainable due to the additional transport and excavation / fill works required. The proposed approach would therefore maximise the re-use within the Proposed Development of material that is excavated for the cable construction, thereby not sterilising this resource which is already subject to sterilisation effects from the constraints of the A283's proximity. Whilst soft sand remaining under the onshore cable route would be sterilised for the duration of the construction and operational phases, it would become available again upon decommissioning. As noted within response to RR 2.3.33, it is not possible to calculate the potential volumes of soft sand that may be affected at this time, and the proposed worst-case approach is therefore considered acceptable and provides confidence that mitigation will be enacted. Stage specific CoCPs will be required in accordance with Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**.
2.3.35	**Historic Environment** 3.13The main focus of this representation is the concern about the anticipated scale of historic environment impacts that may arise as a result of the Project. The risk of harm to heritage assets, including those of national significance, along with the absence of field investigations and inconsistent approach to evaluation of high-risk areas, results in the possibility of an unacceptably high degree of harm to the historic environment. *Assessment Methodology* i. WSCC disagrees with some aspects of the ES methodology, principally the assessment of: the significance for high value heritage assets; the magnitude of change; the assessment of effects of mitigation; substantial vs less than substantial harm and how these equate to the EIA assessment framework;	Whilst the nature of any disagreement is not made clear, it is noted that the assessment methodology followed in **Chapter 25: Historic environment, Volume 2** of the Environmental Statement (ES) **[APP-066]** is consistent with the methodology that was set out within the Scoping Report. It is also consistent with the approach which has been used in previous environmental assessments for other recent Development Consent Order (DCO) projects such as Sizewell C nuclear new build and Yorkshire GREEN grid connection. In the case of Sizewell C, where a decision was made and consent was granted, the approach was accepted by the Examining Authority. The Yorkshire GREEN grid connection decision is still awaited. The embedded environmental measures for the Proposed Development were established and adapted through the pre-DCO Application consultation process. Following a meeting on 27 October 2023 with West Sussex County Council (WSCC) Archaeologist, C-225 has been updated by the Applicant within the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** (submitted at the Procedural A Deadline) and the **Commitments Register** **[APP-254]** (updated at the Deadline 1 submission) to the following: C-225: "*Where previously unknown archaeological remains of high heritage significance are identified through surveys along the cable route, and where these locations have not been possible to avoid during earlier design*

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	medium (potentially significant) residual effects; and what constitutes a 'worst-case scenario'. ii. WSCC is concerned that some of the content and wording of the Commitments Register and Draft DCO may not robustly secure the delivery of historic environment commitments, including mitigation measures, public engagement measures, and appropriate archive provision. iii. WSCC remains concerned that heritage assets were not afforded sufficient consideration in the selection of viewpoint locations within the LVIA. As a result, visualisations are not always sufficient to assess the degree of change within the setting of heritage asset.	*stage, consideration will be made for engineering solutions (e.g. narrowing of the construction corridor, divert cable route within DCO Order Limits, re-siting stockpiles) to avoid impacts in the first instance ~~minimise direct impacts~~. Where impacts are not avoidable, these will be minimised where possible through design solutions and an appropriate programme of mitigation will be undertaken to ensure preservation by record. Such measures will be reviewed in consultation with relevant stakeholders (WSCC Archaeologist and Historic England). An onshore outline WSI provides detail of appropriate methodologies to be implemented during the evaluation and mitigation stages of the archaeological works.*" Commitment C-225 will be secured within the **Outline Onshore Written Scheme of Investigation (WSI) [APP-231]**, which would itself be secured by Requirement 19 of the **Draft Development Consent Order (DCO) [PEPD-009]**. Further consultation is currently being undertaken with the WSCC Archaeologist and Historic England on the **Outline Onshore WSI [APP-231]** and a revised version will be submitted at Examination Deadline 3. The Applicant would welcome specific examples for further discussion. The approach to the assessment of effects though change to setting is provided in Section 25.7 in **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**. Viewpoint (VP) selection has been an iterative process with the LVIA team and informed by engagement with key stakeholders, to ensure that where VPs are selected in the vicinity of heritage assets with settings that are sensitive to change, that these VPs are located to the advantage of illustrating views and supporting the historic environment assessment within the ES. However, along the onshore cable route, where effects arising through change to setting will be limited to the construction phase and therefore temporary, the Applicant has placed less of an emphasis on requiring heritage-specific VPs but rather ensuring, that VPs are selected/adapted to better support both the landscape and visual impact assessment (LVIA) and the historic environment assessments. Following the first ISH in February 2024, the Applicant has agreed to undertake additional viewpoint assessment from Oakendene Manor, which will be photographed when land access and suitable weather is available.
2.3.36	*Assessment of Effects* iv. Due to the scale of the proposals, significant effects upon the historic environment are inevitable. Given the absence of field evaluation, a risk to nationally significant archaeology has not yet been ruled out. v. Despite acknowledging major concerns about LACR-01d, consideration of alternatives (Chapter 3) appears to give insufficient weighting to the historic environment and to the risk to nationally significant archaeology and associated NPS-EN1 policy requirements. vi. Concern is raised about the identified significant residual adverse effects to a number of heritage assets, and lower levels of harm to a large number of additional heritage assets.	The assessment within **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]** identifies significant effects on historic environment receptors. The **Planning Statement [APP-036]** outlines the position with regards the planning balance with regard to the benefits of the Proposed Development and the harm to heritage assets that is identified in **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**, as per paragraphs 4.7.66 and 5.4.10 of the **Planning Statement [APP-036]**. Commitments C-225 (updated by the Applicant within the **Outline Code of Construction Practice (CoCP) [PEPD-033]** (submitted at the Pre-Examination Procedural Deadline A on 16 January 2024)) and C-79 in the **Commitments Register [APP-254]** (updated at the Deadline 1 submission) provide for mitigation through design and archaeological recording. This will be secured through the **Outline Onshore Written Scheme of Investigation (WSI) [APP-231]**, which also sets out the methodological approach for archaeological investigations which ensures further investigation will be undertaken prior to construction. The **Outline Onshore WSI [APP-231]** is secured by Requirement 19 of the **Draft Development Consent Order [PEPD-009]**. Further consultation is currently being undertaken with the WSCC Archaeologist and Historic England on the **Outline Onshore WSI [APP-231]** and a revised version will be submitted at Examination Deadline 3.

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2.3.37	*LACR-01d* vii. The archaeological sensitivity of sections of the route is exceptionally high. LACR-01d crosses an area of the South Downs, which forms part of an incredibly rich and complex multi-period prehistoric landscape of national significance, including scheduled Early Neolithic flint mining sites constituting the earliest evidence industrial activity in Britain. In particular, the lack of field evaluation within this area is wholly unacceptable. viii. There is an identified risk of harm to highly sensitive and nationally significant heritage assets. Notwithstanding the comprehensive package of field investigations and mitigation measures set out within the OOWSI, it cannot currently be demonstrated that mitigation will reduce potential harm to acceptable levels. Mitigation via 'avoidance by micrositing' is not demonstrated to be a securable option within the application.	The **Chapter 25: Historic environment, Volume 2** of the Environmental Statement (ES) **[PEPD-020]** identifies a high potential for archaeological remains of high heritage significance within the area of the South Downs. Archaeological field evaluation has been undertaken within the South Downs in the form of a geophysical survey and the results are described in the **Onshore Geophysical Survey Report** **[PEDP-031, PEDP-113 - PEDP-119]**. Specifically, the South Downs is covered by Fields 050-117. Survey in this area identified just two features identified as definite or probable archaeology: • (52_1) possible ditch forming part of an enclosure; and • (85_1) a possible barrow. Other features were identified as having a possible archaeological origin, including multiple dispersed pit-type anomalies (e.g. 75_1) or areas of enhanced magnetism with unclear origins (e.g. 73_2, 74_3 and 75_2), weaker linear bands (e.g. 66_1, 66_2, 74_1) and weak curving anomaly (e.g. 62_1), which could be of archaeological origin. However, the geophysical survey did not indicate the presence of extensive or complex archaeological remains in which to targeted archaeological trial trenching, and so it is proposed to include this area within further evaluation to be undertaken prior to construction as specified in the **Outline Onshore Written Scheme of Investigation (WSI)** **[APP-231]**. Please refer to the Applicant's response to **reference 2.3.35** above, in relation to embedded environmental measures. The **Outline Onshore WSI** **[APP-231]** sets out the methodological approach for archaeological investigations which ensures further investigation will be undertaken prior to construction. Engagement will be undertaken with West Sussex County Council to provide comment/input to this document which will be updated throughout the Examination. Stage specific WSIs will be produced in accordance with Requirement 19 of the **Draft Development Consent Order** **[PEPD-009]**.
2.3.38	*Oakendene substation* ix. WSCC is concerned about the proposed harm to grade II listed Oakendene Manor, arising via permanent changes to its setting from construction and operation of Oakendene substation and compounds. Locations of viewpoints do not allow accurate assessment of the magnitude of change within the setting of the asset. WSCC does not consider that there is sufficient evidence to conclusively rule out substantial harm.	Whilst West Sussex County Council's relevant representation refers only to viewpoint locations, it is noted that the assessment of effects on settings during the construction phase and operation and maintenance phase considered not only views but also other relevant factors including changing land use and noise (for example during the construction phase). This is in accordance with relevant guidance, and the methodology described in Section 25.8 of **Chapter 25: Historic environment, Volume 2** of the ES **[APP-066]**. It was not possible to secure landowner access for a photograph viewpoint directly from Oakendene Manor but a viewpoint was obtained from a Public Right of Way (PRoW), with a view of the onshore substation site and Oakendene Manor (Figure 18.12, **Chapter 18: Landscape and visual impact assessment – figures, Volume 3** of the ES **[APP-099]**). This informed the assessment, along with baseline information on the Oakendene historic parkland and the topography of the onshore substation site (see **Appendix 25.5: Oakendene parkland historic landscape assessment, Volume 4** of the ES **[APP-211]**). The assessment also took account of the measures proposed in **Outline Landscape and Ecology Management Plan** **[APP-232]**, detailing the indicative landscape plan and design principles, which have been formed with consideration to the setting of Oakendene Manor and will be secured through Requirements 12 and 13 of the **Draft Development Consent Order** **[PEPD-009]**. Design principles within the **Design and Access Statement** **[AS-003]** are secured through Requirement 8 of the **Draft Development Consent Order** **[PEPD-009]**. In response to the request for further information made by WSCC, the Applicant confirms that they are in the process of seeking to agree access to Oakendene Manor to undertake viewpoint photography directly from the manor house, in line with viewpoint HE 01, as identified in Figure 25.5h, **Chapter 25: Historic environment –**

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		figures, Volume 3 of the ES **[APP-099]**. Further photography will be undertaken from other locations within the vicinity of Oakendene and reviewed to determine appropriateness for generating further visualisations for submission. The Applicant will engage with WSCC, and Horsham District Council, in this process and supply visualisations of additional viewpoint photography at a deadline subsequent to completion of this work, where required. It is noted that with regard to Oakendene Manor, Horsham District Council has stated in their Relevant Representation **reference 2.5.89** that: "*HDC confirms that, having reviewed the location of designated above-ground heritage assets within the vicinity of the development and evaluated the contribution that their settings make to the significance of the asset, the impact of the development, including the substation, on these would be less than substantial at the lower end of the scale of that category in all cases of the historic environment and individual heritage assets*." This response is consistent with the conclusions of the assessment within **Chapter 25: Historic environment, Volume 2** of the ES **[APP-066]**.
2.3.39	*Offshore* i. Some concerns remain regarding the impact of offshore arrays on onshore designated heritage assets, arising via changes to their wider settings. Whilst significant effects are not identified for individual assets, there will be less than substantial harm to a large number of designated heritage assets. This amounts to a not insignificant cumulative effect on the historic environment. WSCC is concerned that assessment methodologies for medium residual effects have been used to downplay the effects of offshore turbines on onshore designated heritage assets.	Effects through change to setting have been assessed according to methodology set out in the Scoping Report (Rampion Extension Development (RED), 2020). The approach is detailed in Section 25.8 in **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]** and **Appendix 25.7: Settings assessment scoping report, Volume 4** of the ES **[APP-213]**. The methodology which is in line with relevant legislation and policy and includes a narrative description of the extent and nature of any identified effect. The assessment did not identify any significant effects as a result of changes in the settings of heritage assets as a result of the offshore array. A comprehensive set of assets were included within the assessment. This included a range of asset types over a wide area and the number of not significant effects would not lead to a significant cumulative effect.
2.3.40	Mitigation, Compensation and *Enhancement* ii. The OOWSI sets out a comprehensive suite of proposed archaeological mitigation measures which in general will allow for appropriate and proportionate mitigation, to be secured via the SSWSIs. However, some areas need to be addressed, including: a. Timing, scope, extents and sampling size of field evaluations; b. Provision for further detailed geophysical survey and/or alternative survey techniques, if appropriate; c. Research aims, including specific palaeo-environmental research questions; and d. Details of the mechanisms for and feasibility of securing 'avoidance by micrositing', if nationally significant and potentially spatially extensive remains are encountered.	The field evaluations outlined in the **Outline Onshore Written Scheme of Investigation (WSI)** **[APP-231]** is secured through Requirement 19 of the **Draft Development Consent Order** **[PEPD-009]** and will be undertaken pre-construction, with the precise timing, scope, extents and sampling size to be determined and subject to further agreement with the relevant stakeholders. Potential areas of archaeological trial trenching, fieldwalking and test pitting are shown in Figures 3 and 4 of the **Outline Onshore WSI** **[APP-231**]. Magnetometry geophysical survey has continued following Development Consent Order (DCO) Application submission with survey results up to December 2024 provided in the updated **Onshore geophysical survey report, Volume 4** of the ES **[PEPD-031]** submitted at Pre-Examination Procedural Deadline A. The **Onshore geophysical survey report, Volume 4** of the ES **[PEPD-031**]) includes 88% of land within the proposed DCO Order Limits considered suitable for survey. Provision for use of other geophysical survey techniques, where appropriate, will be made in an update to the **Outline Onshore WSI** **[APP-231]**. Consultation is ongoing with the WSCC Archaeologist and Historic England on the update to the **Outline Onshore WSI** **[APP-231** and this will be submitted at Examination Deadline 3. The **Outline Onshore WSI** **[APP-231]** provides relevant overarching research context for further archaeological investigations, which will be further refined and detailed within relevant stage specific Written Scheme of Investigation (SSWSIs), to be agreed with the relevant consultees.

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		Please refer to the Applicant's response to **reference 2.3.35** above, in relation to embedded environmental measures. A flow chart will be appended to the **Outline Onshore WSI** **[APP-231]** to include procedures following discovery of previously unknown archaeological remains. This will be included in the updated **Outline Onshore WSI** **[APP-231]** to be submitted at Examination Deadline 3.
2.3.41	*Oakendene Substation* iii. Embedded mitigations cannot fully offset the identified harm to Oakendene Manor and are likely to be limited by the required functionality of the substation. iv. Identified mitigation (landscaping and design) measures are not yet sufficiently secured by design principles. Options for changes to the indicative layout should be explored, and further details of the design (roofline, materials, colour scheme, landscaping etc.) should be provided during the Examination.	A historic landscape assessment of the historic parkland at Oakendene is presented in **Appendix 25.5: Oakendene parkland: historic landscape assessment, Volume 4** of the ES **[APP-211]**. This exercise informed the design process and the assessment of effects for the parkland and listed building presented in **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**. The assessment of effects on settings during the construction phase and operation and maintenance phase considered relevant factors including views, changing land use and noise (for example during the construction phase). The understanding of the historic environment interests of Oakendene Manor then informed the design principles identified to reduce and minimise the impact on the setting of the building and these are secured in the **Design and Access Statement (DAS)** **[AS-003]**. The detailed design of the onshore substation must be undertaken in accordance with these design principles and provided for approval of the planning authority as per the requirements of the **Draft Development Consent Order** **[PEPD-009]** including 8 (2) which states that the design for approval, "*must accord with the principles set out in the relevant part of the design and access statement*". Requirement 12 (3) of the **Draft Development Consent Order** **[PEPD-009]** also requires accordance with the DAS for provision of the landscaping details for the onshore substation. The Applicant is considering an update to the **DAS** **[AS-003]** following issues raised at Issue Specific Hearing 1 in February 2024. This response is consistent with the conclusions of the assessment within **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**.
2.3.42	**Water Environment** 3.14The focus of this representation is on the implications of the Project on flood risk across West Sussex. As the Lead Local Flood Authority (LLFA), WSCC is concerned with flooding from surface water, groundwater and Ordinary Watercourses. Key areas of concern relating to flood risk include the consideration of the drainage hierarchy, use of source control Sustainable urban Drainage Systems (SuDS) features and further detail being required to demonstrate the drainage design. *Assessment Methodology* 1. The Applicant should adhere to the requirements of the Land Drainage Act 1991 and WSCC's policy with regards to the requirements of work within Ordinary Watercourses, which has not been fully recognised in the documents.	The below responses address each of the particular concerns of the Lead Local Flood Authority (LLFA) in relation to flood risk. **Appendix 26.2: Flood Risk Assessment (FRA), Volume 4** of the ES **[APP-216]** fully considers all sources of potential flood risk in turn including surface water, groundwater and Ordinary Watercourses. The **Outline Operational Drainage Plan** **[APP-223]** documents how it has followed the drainage hierarchy and puts forwards a range of relevant sustainable urban drainage systems (SuDS) features. The final Operational Drainage Plan must accord with the **Outline Operational Drainage Plan** **[APP-223]** and is secured via Requirements 17 and 18 of the **Draft Development Consent Order** **[PEPD-009]**. The preliminary findings of both the **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]** and **Outline Operational Drainage Plan** **[APP-223]** were previously discussed with West Sussex County Council (WSCC) at targeted stakeholder consultation meetings (on 01 April 2022 and 22 June 2022). The requirement for Ordinary Watercourse consent (OWC) is outlined by the Applicant in commitments C-182, C-126, C-17, provided in Table 8-1 of the **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]** and Table 26-10 in the **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**. As stated in commitment C-182: *"Work within banktop of any other watercourse (not Main River and outside of IDB) will require consent from the LLFA". Whilst* C17 states" Appropriate *environmental permits or land drainage consents will be applied for works from the Environment Agency…or from the LLFA (for Ordinary Watercourse crossings)".*Commitment C-126 *states "Minor watercourses (where open cut techniques are*

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		proposed for the permanent cable crossings) will also have temporary crossings for the haul road to provide vehicular access along the route. A mixture of culverts and / or clear span bridges could be employed based on crossing specific requirements (size of watercourse and flood risk). These will be subject to permits and consents with the Environment Agency and Lead Local Flood Authority (LLFA).” Although the OWC is outside of the scope of the **Draft Development Consent Order** **[PEPD-009]**, the Applicant will adhere to each of the OWC requirements in accordance with legislation as noted in the above measures. In paragraph 26.2.8 of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]** the need for an OWC is also acknowledged by the Applicant.
2.3.43	*Assessment of Effects* ii. The Outline Operational Drainage Plan (OODP) (APP-223) defines the basis of the design for the operational drainage at the Oakendene substation and National Grid extension works, following the outputs of the flood modelling and drainage assessments undertaken. WSCC raises concerns that the current FRA and design proposals for the Oakendene substation do not truly reflect the winter flooding that occurs at this location. Therefore, evidence that consideration of local groundwater conditions have been factored into the FRA and outline design is required.	Consideration of flood risk at the onshore substation site is in the interest of the applicant, to ensure the scheme is able to operate as planned, as referred to in section 6.5.12 of the **Appendix 26.2: Flood Risk Assessment (FRA), Volume 4** of the ES **[APP-216]**. The indicative site layout has been developed accordingly, taking risk of flooding into account. The Applicant is confident the precautionary approach in the **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]** and **Design and Access Statement** **[AS-003]** will ensure the substation will not be at flood risk, nor increase flood risk elsewhere (addressed through the adherence to National Grid Target Guidance (C-230) (secured via the **Design and Access Statement** **[AS-003]** and via draft DCO Requirement 8 for the onshore substation at Oakendene and Requirement 9 for the extension of the existing National Grid Bolney substation. The Operational Drainage Plan must accord with the **Outline Operational Drainage Plan** **[APP-223]** and will be secured via Requirement 17 for Oakendene and Requirement 18 for the extension of the existing National Grid Bolney substation)). The assessment of flood risk and outline design was prepared in accordance with the West Sussex County Council (WSCC) and Horsham District Council (HDC) advice, as recorded in meeting minutes included in Annex A of the **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]**. As outlined in the **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]** the onshore substation at Oakendene is situated within Flood Zone 1 (low probability of flooding). The main sources of flood risk at the onshore substation site are fluvial and surface water, associated with run-off due to the clayey ground conditions. The approach to assessment of fluvial flood risk from the ordinary watercourse to the south of the substation site was agreed with the Lead Local Flood Authority (LLFA) (WSCC) and the Local Planning Authority (HDC) during a consultation meeting on 22 June 2022. It was agreed that the 0.1% Annual Exceedance Probability (AEP) flood extent (defined by the Environment Agency Risk of Surface Water mapping) was a suitably precautionary proxy for the 1% AEP plus a climate change allowance for the operation and maintenance phase (2030 to 2060). The HDC flood officer commented that as long as the onshore substation was positioned outside of the 0.1% AEP extent they would not be concerned. HDC also advised that no HDC records of historical flooding indicated flood incidents at the onshore substation site at Oakendene. No advice to the contrary was provided by WSCC during pre-DCO application consultation. Groundwater flood risk is considered in Section 5.5 of the **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]**. At the Oakendene substation site, the risk of groundwater flooding has been informed based on the Area's Susceptible to Groundwater Flooding data and GeoSmart Groundwater Flood Risk Map (GW5), both of which are presented in the Horsham District Council (HDC) Strategic Flood Risk Assessment (SFRA) (Appendix A, Figure 3A and 3B) (AECOM, 2020). The risk of groundwater flooding is indicated as '<25%' in Figure 3A, and as 'Negligible' within the more detailed GeoSmart data in Figure 3B. This is consistent with the onshore substation being underlain by clayey ground conditions. On this basis, the risk of groundwater flooding (and the possibility of high groundwater levels) at the Oakendene substation site was not considered further.

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		The key flood risk to the site was deemed to be from surface water, given the underlying soils detailed in Paragraphs 2.2.15 and 2.2.16 of the **Outline Operational Drainage Plan** **[APP-223]** which are noted to be "*slowly permeable seasonally wet with impeded drainage*". The drainage hierarchy was followed and on this basis infiltration was not considered a viable means for the outline operational drainage plan. Therefore, high groundwater is not thought to be driving local flood risk in this area. Surface water flood risk indicated in Figure 26.2.6a of **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]** would be adequately dealt with via the drainage infrastructure for the site, as set out in the **Outline Operational Drainage Plan** **[APP-223]**. As set out in paragraphs 2.4.10 to 2.4.13 of the **Outline Operational Drainage Plan** **[APP-223]**, there is significant flexibility in how the final design of the onshore substation could be delivered. Therefore, there is deemed to be sufficient flexibility within the current outline strategy such that it can be revised and adapted at the detailed drainage design phase to address any concerns regarding winter flooding and associated loss of basin storage. As stated in Paragraph 6.5.6 of the **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]**, final design and sizing of drainage mitigation measures will be determined at the detailed drainage design stage in liaison with WSCC (as Lead Local Flood Authority (LLFA)). At present the comments made in relation to 'winter flooding' are vague and lack details about location, flood mechanism and timing. The Applicant requested further details and any supplementary data from WSCC and HDC on 08 February 2024, and will continue to carry out engagement with both stakeholders during the Examination. Nonetheless the Applicant considers that any additional winter flooding information identified by WSCC in their Relevant Representation can be factored into the detailed drainage design. The outline drainage strategy presented within the **Outline Operational Drainage Plan** **[APP-223]** is based on several conservative assumptions (regarding the maximum design parameters for the substation, impermeability and climate change allowance). Note that the Applicant has provided the further information of the proposed onshore substation site at Oakendene with site levels in relation to flood risk in Action Point 20. This has been submitted at Deadline 1 in **8.25 Applicant's Response to Action Points Arising from Issue Specific Hearing 1, Appendix 4 – Further information for Action Point 20** **(Document Reference: 8.25.4)**.
2.3.44	*Mitigation, Compensation and Enhancement* iii. Surface water flood risk should be considered within any emergency response plan, given the topography of the central section of the onshore cable route and historic flooding records. The OcoCP does not cover this within its emergency response planning. iv. Temporary haul roads and accesses should be constructed so as not to cut-off existing surface water flow paths. This could increase surface water flood risk off-site and should be demonstrated within the documents.	Table 4-6 in Section 4.8 of the **Outline Code of Construction Practice** **[PEPD-033]** outlines commitments relevant to emergency planning procedures which includes commitment C-118 *'Emergency Response Plans (ERP's) for flood events will be prepared for all construction activities, working areas, access and egress routes in floodplain areas (tidal and fluvial)'*. The requirements of the Emergency Response Plan are outlined in Section 8.2 of the **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**. Paragraph 8.2.3 includes provisions for surface water flood risk outlining that "*the circumstances under which different responses will be implemented should be specified, with an escalation of response associated with increasing levels of danger. For example, a 'be prepared' alert may be raised upon receipt of an Environment Agency Flood Alert or a Met Office Severe Weather Warning for heavy rain, followed by an 'evacuate' order upon receipt of an Environment Agency Flood Warning, or at the discretion of the site Health, Safety, Security and Environment (HSSE) Manager, based upon an appraisal of local conditions*". It is envisaged that these measures will be sufficient to address surface water flood risk to construction activities and personnel. This will be secured as part of the emergency response plan via Requirement 22 (j) of the **Draft Development Consent Order** **[PEPD-009]**.

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		A number of embedded environmental measures have been included within the **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** to ensure that temporary haul roads and associated crossings do not result in a detrimental impact to flood risk. Specifically, environmental measure C-73 states that: "*Where the development intersects overland flow pathways or areas of known surface water flooding appropriate measures will be embedded into the design*". In addition, environmental measure C-181 states that "*Access roads will have cross drainage provided where necessary at topographic low points*". Commitments C-128, C-145, C-176, C-177 and C-178 outline further provisions made in relation to temporary watercourse crossings. These environmental measures have been secured by the **Outline Code of Construction Practice (CoCP) [PEPD-033]** via the Construction Phase Drainage Plan (as outlined in Table 3-1 which will accompany the stage specific CoCP to be submitted post-consent and approved by the local authority), which, as set out in paragraph 5.10.9, states that "Details of construction phase drainage will be developed by the Contractor*(s) and will be presented in a Construction Phase Drainage Plan and approved as part of the stage specific CoCP. Details of the Construction Phase Drainage Plan will be subject to consultation with WSCC and other relevant consenting authorities prior to the start of construction*". This will be secured as part of the construction phase drainage plan via Requirement 22 (c) of the **Draft Development Consent Order [PEPD-009]**.
2.3.45	**Major Accidents and Disasters** 3.15 WSCC requires the dDCO to secure consultation with West Sussex Fire and Rescue Service (WSFRS) during detailed design and pre-construction phases for the Oakendene substation, to ensure that it has the opportunity to apply control measures to mitigate a number of risks and uncertainties raised through the DCO documentation. These are: i. Responding- the potential for extended response times for emergency service attendance at incidents. ii. Emergency Planning – sharing of emergency plans associated with Oakendene substation and Bolney substations, and associated works during Rampion 2 onshore construction. iii. Allowing for pre-planning – development of emergency plans, potential additional training of FRS personal through the emergence of new technologies, and suppressions systems/techniques required to safely deal with emergency incidents. iv. Fire suppression systems – WSFRS will require information on the intended access to the substation, the alternative access if the layout requirements require, and the supply of water for firefighting.	The **Draft Development Consent Order [PEPD-009]** was updated at the Pre-Examination Procedural Deadline A submission on 16 January 2024 to include the requirement (Requirement 8) to consult with West Sussex Fire and Rescue Service (WSFRS) during detailed design for the Oakendene substation.
2.3.46	**Public Health** 3.16 The focus of this representation is on the assessment of the communities affected by the Project during the construction and operational phases and the Equality Impact Assessment (EqIA)	Responses are provided to each point accordingly: i. As stated in paragraph 28.9.58 of **Chapter 28: Population and human health, Volume 2** of the ES **[APP-069]**, while overnight drilling would occur and could cause noise levels to exceed the night time lowest observed adverse effect level (LOAEL), such operations would be temporary and transient in

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	(APP-221) undertaken by the Applicant. Key concerns are as follows: i. In periods of overnight drilling, nearby receptors will be impacted, which could impede on the residents' quality of sleep, affecting health and wellbeing. Stage-specific CMS and the OcoCP need to satisfy these concerns regarding noise, vibration and lighting at the construction compounds and drilling sites. Impacts must be kept to a minimum through secured mitigation, including detailed plans on phasing of the onshore works to ensure construction timescales are minimised. ii. HGVs movement during construction should, where possible, avoid routes through the Cowfold and Storrington AQMAs. For the occasions where this cannot be avoided, WSCC seeks assurance that all mitigation has been taken to reduce impacts on air quality and disruption to residents. iii. WSCC seeks assurances that the emergency response plans, secured through the dDCO, will include timely actions that are taken in the event of damage to utilities, which is a potential risk due to trenching a large swathe through the County. Owing to the potential for, and significant issues associate with, utility outages, delays in the mobilisation of support to the communities affected, especially to those who are vulnerable in the communities, needs to be planned and mitigated for. iv. The Application does not evidence engagement with the affected communities and how the outcome of those engagements have influenced the Applicant's assumptions used as a basis for the assessment findings and decisions on mitigation measures to reduce these impacts. Specifically, impacts on communities near the proposed site of the onshore substation and the temporary construction compound sites. v. WSCC seeks assurance that the EqIA for any decommissioning in the future would be carried out prior to decommissioning as this is estimated 30 years in the future and would require updating to include any changes within that timeframe.	nature, thereby limiting the potential for health and wellbeing effects which would require long-term exposure to changes in the noise environment. Table 5-3 of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** outlines management measures and mitigation proposed at all onshore construction areas to reduce the effects relating to noise and vibration from construction of the Proposed Development, including commitment C-26. Commitment C-263 for the production of a Noise and Vibration Management Plan (NVMP) during detailed design based on the principles in the **Outline CoCP** **[PEPD-033]**, detailing best practicable means and location specific mitigation. The **Outline CoCP** **[PEPD-033]** is secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. ii. A range of embedded environmental measures have been provided by the Applicant as detailed within the **Commitments Register** **[APP-254]** which has been updated at Deadline 1 submission and secured through **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** which has been updated at Deadline 1 submission. This includes: • Commitment C-157: *The proposed heavy goods vehicle (HGV) routing during the construction period to individual accesses will be developed to avoid major settlements of Storrington, Cowfold, Steyning, Wineham, Henfield, Woodmancote and other smaller settlements where possible*; and • Commitment C-158: *The proposed heavy good vehicle (HGV) routing during the construction period to individual accesses will avoid the Air Quality Management Area in Cowfold where possible.* These commitments are also reflected in Table 5-1 of the **Outline CTMP** **[PEPD-035a]** which has been updated at Deadline 1 submission and confirms prescribed local HGV access routes for all sections of the onshore cable corridor and Table 5-2 which details specific local constraints and proposed management of construction traffic routes. These routes and other detailed contained within the Outline CTMP will be secured Requirement 24 within the **Draft Development Consent Order** **[PEPD-009]**. These commitments ensure that HGV construction traffic will route along the A27 and A23 to gain access to the A272 east of Cowfold wherever possible, thereby avoiding the village centre. Therefore, only accesses A-52, A-56 and A-57 will require construction traffic to route through Cowfold Village centre. As calculated by using data included in Table 5-3 of the **Outline CTMP** **[PEPD-035a]** which has been updated at Deadline 1 submission, the impact of this commitment is the removal of up to 22,000 two-way HGV trips (11,000 HGVs) from Cowfold Village centre over the construction phase. These commitments will be secured Requirement 24 within the **Draft Development Consent Order** **[PEPD-009]**. The likely significant transport effects associated with the construction phase of the Proposed Development have been assessed in **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]**, ES Addendum (submitted at Deadline 1) and **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[APP-197]** which has been updated at the Deadline 1 submission. As noted within Institute of Environmental Management and Assessment (IEMA) (1993) publication Guidelines for the Environment Assessment of Road Traffic an increase of less than 10% is not discernible environmental impact as is within day-to-day fluctuations in traffic flow. Therefore, no significant effects are predicted to occur within Cowfold. With regards to use of the 1993 guidance, it is also noted that the Applicant has committed to producing a Technical Note for Deadline 2 that reviews the conclusions of **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES **(Document**

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		Reference: 6.2.32) (submitted at Deadline 1) against the 2023 IEMA publication Environmental Assessment of Traffic and Movement. This has replaced the 1993 guidance but was not published in time the Applicant to use as part of the DCO application. At this this stage, it is not anticipated that use of the 2023 guidance will impact upon the conclusions of **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES **(Document Reference: 6.2.32)** submitted at Deadline 1. **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** presents an assessment of air quality impacts from construction traffic. The assessment concludes that the Proposed Development will not result in significant impacts on air quality, as a result of increased traffic on the local road network. An air dispersion traffic modelling study of the potential impacts on the Cowfold Air Quality Management Area (AQMA) is presented in Section 1.4 within **Appendix 19.1: Full results of construction road traffic modelling, Volume 4** of the ES **[APP-174]** with the assessment in **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** concluding that there are no significant impacts confirmed by the **Chapter 32: ES Addendum, Volume 2** of the ES **(Document Reference: 6.2.32)**submitted at Deadline 1. Table 19-9 within **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** states that there will be no significant traffic travelling through the Storrington High Street Air Quality Management Area (AQMA) and that Annual Average Daily Traffic (AADT) along the Storrington High Street AQMA are below the Institute of Air Quality Management (IAQM) and EPUK 92017) screening criteria for road links in AQMA's, therefore potential effects are negligible.
		iii. The Applicant confirms that an amendment to Paragraph 4.8.1 of the **Outline Code of Construction Practice (CoCP) [APP-224]** will be amended to include damage to utilities. iv. The **Consultation Report [APP-027]** and associated appendices demonstrate the changes to the Proposed Development that have arisen from consultation and engagement. The **Consultation Report [APP-026]**, sets out the numerous rounds of statutory and non-statutory consultation including notices, advertisements and leaflets around the proposed cable route, including the villages of Cowfold, Washington and Climping. Additionally, the Applicant attended a public Q&A session organised by Cowfold Parish Council, a meeting of Washington Parish Council, and briefed members of Clymping Parish Council, in November 2022. A public information event relating to the onshore substation was held in Cowfold in June 2023. Issues pertaining to Cowfold are drawn together from page 35 of the **Consultation Report [APP-026]**. Noise and vibration and air quality impacts arising from the Proposed Development are mitigated within the **Outline Code of Construction Practice [PEPD-033]** secured by Requirement 22 within the **Draft Development Consent Order [PEPD-009]**. Traffic and transport impacts are mitigated through the **Outline Construction Traffic Management Plan [PEPD-035a**] as secured by Requirement 24 within the **Draft Development Consent Order [PEPD-009]**. v. Should the onshore substation need to be decommissioned in the future, this would be subject to a separate planning application. The planning application would need to comply with regulatory requirements, such as Equalities Impact Assessment (EqIA), prior to the commencement of any decommissioning activities.
2.3.47	**Public Rights of Way**	The Applicant welcomes the acceptance of the principles outlined in the **Outline Public Rights of Way Management Plan (PRoWMP) [APP-230]**. The **Outline PRoWMP [APP-230]** has corrected inaccuracies in

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	3.17 The principles set out in the Outline Public Rights of Way Management Plan (OPRoWMP) (APP-230) are accepted by WSCC. Mitigation measures are considered for each location where a ProW will be impacted, to reduce this potential effect upon the public user. However, there are current inaccuracies in the documents that may affect the extent of these measures and should be addressed by the Applicant. *Assessment Methodology* i. The status of the route being impacted must be clearly presented, as this will determine what public rights exist. Currently there are some inaccuracies in the documents in relation some of the routes, which will have a big effect upon the proposed mitigation measures presented. These will be further discussed with the Applicant.	the errata list in the **Cover Letter** [**PEPD-001**] provided at Pre-Examination Procedural Deadline A on 16 January 2024.
2.3.48	*Assessment of Effects* ii. The construction phase presents potential effects to a number of ProW, some heavily used such as the Downs Link and the South Downs Way. The interactions of these routes with construction activities needs to be kept to a minimum and any management, including alternative routes, must be suitable for lawful users.	A total of 50 Public Rights of Way (ProWs) and two areas of Open Access Land will be affected by the onshore elements of the Proposed Development. Section 5 of the **Outline Public Rights of Way Management Plan [APP-230]** describes how those impacts can be managed and mitigated where appropriate as secured by Requirement 20 within the **Draft Development Consent Order [PEPD-009]**.
2.3.49	*Mitigation, Compensation and Enhancement* iii. The OPRoW makes reference to users waiting whilst construction traffic passes over the route. It is important to note that public access rights take precedent over any private right of vehicular access; therefore, vehicles should give way to lawful public path users and this should be addressed in the outline plan.	The **Outline Public Rights of Way Management Plan [APP-230]** will be updated at the Deadline 2 submission to state that where it is safe to do so construction traffic will give-way to PRoW users. However, very occasionally PRoW users may have to wait for a short period of time whilst the shared route is in use by construction traffic as it may not always be possible or safe for HGVs to give way (e.g. HGVs turning into a side road or along a narrow track).
2.3.50	**Draft Development Consent Order (APP-019)** 3.18 In June 2023, WSCC commented on an early draft of the Ddco and while the Applicant has made some of the changes suggested, WSCC remains concerned about numerous matters. These will be shared with the Applicant in due course and set out in the LIR. A summary of the main concerns (which is not exhaustive) is set out below: i. The definition of '*commencement'* and, in particular, the implications arising from certain operations that fall outside that definition and which do not appear to be controlled.	As noted, the Applicant has addressed a number of the WSCC previous comments in the draft **Draft Development Consent Order [PEPD-009]**. In relation to the definition of 'commencement', this term has been defined so as to allow some preparatory activities to take place without triggering compliance with various of the requirements imposed through Part 3 of Schedule 1. However, where the preparatory activities themselves may have an impact, this is reflected in the wording of the specific requirements. For example, in relation to onshore archaeology (requirement 19) it is confirmed at requirement 19(5) that the term "commence" as used in paragraph (1) includes any intrusive onshore site preparation works including trial trenching. Similar wording appears in the requirement securing submission of the stage specific Codes of Construction Practice
2.3.51	ii. Article 43 (1) & 44. (2) should be referenced in accordance with approved plans and 25m maximum easement, not the entire DCO limits.	Whilst these articles provide broad permissive powers, they are subject to the operation of the requirements in Schedule 1 to the **Draft Development Consent Order [PEPD-009]**. This includes the **Outline Landscape and**

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Ref	Relevant representation comment	Applicant's response
		Ecology Management Plan (LEMP) **[APP-232]** secured by Requirement 12, and it is also subject to the terms of the Outline Code of Construction Practice **[PEPD-033]** and specifically the Vegetation Retention Plan in Appendix B secured by Requirement 22.
2.3.52	iii. Part 3 Requirements – the drafting of certain requirements including Requirement 10 (programme of works), Requirement 22 (OcoCP), Requirement 19 (onshore archaeology) and Requirement 23 (onshore construction method statements).	It is not clear what WSCC's concerns are in relation to these Requirements.
2.3.53	iv. Clarification within each Requirement for named stakeholders	The requirements have been framed to ensure approval and discharge by the appropriate stakeholders for the subject matter of the requirement. This does not prevent the discharging bodies from consulting others before determining an application for discharge.
2.3.54	v. Role of WSCC in the discharging of Requirements.	WSCC is noted to have a role in discharging a number of requirements in its capacity as highway authority and local lead flood authority. An amendment has been made to Schedule 14 of the Draft Development Consent Order **[PEPD-009]** (which is given effect by Article 46) to allow local planning authorities to charge for requirement discharge
2.3.55	vi. Schedule 13 – permit excessive powers to fell or lop trees within DCO limits; not reflect appropriate plans to be approved; and contain multiple mistakes.	The Applicant has engaged with WSCC with regards their references to mistakes within Schedule 13 of the Draft Development Consent Order **[PEPD-009]**. The Applicant has reviewed the Schedule and has submitted an updated version of Schedule 13 as part of the Draft Development Consent Order **[PEPD-009]** at Pre-Examination Procedural Deadline A (16 January 2024) including addition of H13 and H27 to Schedule 13 Part 1 (Removal of hedgerows) and the deletion of H377 from Part 1 but added to Part 2 (Removal of Important hedgerows). Removal of trees and hedgerows must be undertaken in accordance with the Vegetation Retention Plans in Appendix B of the Outline Code of Construction Practice (CoCP) **[PEPD-033]** which limits the maximum length to be lost. This is in accordance with commitment C-115 (see the Outline CoCP **[PEPD-033]** and Commitments Register **[APP-254]** updated for Deadline 1 submission and is secured though Requirement 22 of the Draft Development Consent Order **[PEPD-009]).** This commits to minimising loss by notching hedgerows and treelines wherever possible, which is the removal of a shorter section of hedgerow or treeline compared to the construction corridor width. Further detailed description of how both hedgerow and treeline crossings will be managed is provided in paragraphs 5.6.33 to 5.6.41 of the Outline CoCP **[PEPD-033]**. The Applicant is also currently reviewing accesses comprising the Proposed Development as requested by the highway authority and should this indicate that there may be some instances where the additional removal is required such that updates to the Vegetation Retention Plan are required this will be submitted to the Examination.
2.3.56	vii. Schedule 14 – The timeframes for determining applications (and requesting further information) by the relevant authority after consent is granted need to be extended and the fees proposed for determining applications need including.	Schedule 14 already provides 56 days for the determination of applications for discharge of requirements where all necessary information is provided and allows for the period to be extended by agreement. The applicant needs to have certainty as to the timeframe for determination of its submissions in order to be able to plan for its construction programme. Provision for payment of a fee on application for discharge of a requirement has now been included in the Draft Development Consent Order **[PEPD-009]**

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Table 2-4 Applicant's Response to South Downs National Park Authority

Ref	Relevant representation comment	Applicant's response
2.4.1	**Principle of Developing in a National Park** National Parks are a protected landscape and afforded the highest level of protection in terms of landscape. The SDNPA considers that the cost and scope for delivering outside of the National Park has not been appropriately considered as required by paragraph 5.9.10 of National Policy Statement EN-1. This states that the Secretary State may only grant consent in these areas in exceptional circumstances and where the development is in the public interest, subject to a series of 'Major Development Tests', Further, the selected route for the onshore cable corridor has failed to adequately undertake an assessment of detrimental effect on the environment, landscape and recreational activities, and the extent to which these could be moderated.	Section 4.4 of the **Planning Statement** **[APP-036]** sets out the consideration of the key policy test regarding nationally significant infrastructure development taking place in the South Downs National Park (SDNP) in line with the requirements of 5.9.10 of NPS EN-1 (DECC, 2011) and protections for National Parks in paragraph 5.10.32 of the revised NPS EN-1 (DESNZ, 2023). The consideration of the need for the development is outlined in paragraphs 4.4.7 – 4.4.21 of the **Planning Statement** **[APP-036]**. The consideration of the cost and scope of development alternatives outside the SDNP is outlined in paragraphs 4.4.22 – 4.4.67. This section draws on **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** which details the process of site selection and the consideration of alternatives. Section 3.3 of **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** outlines the alternatives considered in terms of grid connection and Section 3.4 sets out the alternatives considered in terms of landfall and onshore cable route. Together, these sections outline the cost and scope of delivering the reasonable alternatives outside of the SDNP. Therefore, this has been appropriately considered, as summarised in the **Planning Statement** **[APP-036]**. The detrimental effects on the environment, landscape and recreational opportunities and extent to which these could be moderated is considered in paragraphs 4.4.68 – 4.4.90 of the **Planning Statement** **[APP-036]**. Specifically, paragraphs 4.4.69 – 4.4.75 considers the environment; paragraphs 4.4.76 – 4.4.84 consider landscape; and paragraphs 4.4.85 – 4.4.88 consider recreational activities. Section 4.4 of the **Planning Statement** **[APP-036]** draws on various assessments in the aspect chapters within the ES (particularly **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**, **Chapter 18**: **Landscape and visual impact, Volume 2** of the ES **[APP-059]**; and **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]**) to outline the detrimental effects of the onshore cable route and the extent to which these could be avoided, prevented, reduced or offset. The **Commitments Register** **[APP-254]** sets out the full range of embedded environmental measures to minimise or mitigate the environmental effects a number of which are relevant to the South Downs National Park. Paragraph 4.4.4 of the **Planning Statement** **[APP-036]** confirms that a judgment as to whether a proposal constitutes major development is not necessary, as all Nationally Significant Infrastructure Projects (NSIPs) are assumed to be major. Therefore, whether development is major or not is a test which does not apply to NSIPs. The Applicant therefore considers that it has appropriately considered the key policy tests in NPS EN-1 5.9.10 (DECC, 2011) and protections for National Parks in paragraph 5.10.32 of the revised NPS EN-1 (DESNZ, 2023)relating to development taking place within the SDNP. Further clarification on special qualities including reference to the designating legislation is provided in **Appendix 5 – Further information for Action Point 27** **(Document Reference: 8.25.5)** submitted at Deadline 1.
2.4.2	**Seascape, Landscape and Visual Impact (Offshore)** The offshore array, by virtue of their proximity to the coastline, size, number and spread is considered to have significant adverse effects on the character and setting of the SDNP. In particular, and as advised in Review and Update of Seascape and Visual Buffer Study for Offshore Windfarms (March 2020) commissioned by the	The seascape and visual impacts of the Rampion 2 wind turbine generators (WTGs) are assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**. In its conclusions, paragraphs 15.15.9 – 15.15.40, the assessment recognises that the South Downs National Park (SDNP) is of particular relevance due to the associative relationship between parts of the SDNP and the marine environment, particularly within the Sussex Heritage Coast, which

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Ref	Relevant representation comment	Applicant's response
	Department for Business, Energy and Industrial Strategy (BEIS as it was then) the combination of National Park and Heritage Coast is particularly sensitive and needs to be given great weight in the planning balance.	has the most prominent association with the seascape along its section of coastal cliffs forming the maritime edges of the SDNP. The closest areas of the Sussex Heritage Coast near Seaford Head and Severn Sisters are identified as representing the geographic extent of the SDNP most likely to experience significant effects to its 'diverse, inspirational landscapes and breathtaking views' as a result of the offshore elements of Rampion 2, however the effects are assessed to be of lesser (medium) magnitude (and not significant) from the more distant parts of the Sussex Heritage Coast around Beachy Head and Birling Gap. Significant visual effects are also assessed as occurring in views experienced from the tops of the wider SDNP open downs, from a range of inland vantage points where the sea is a key component and where Rampion 2 will increase the influence of offshore wind farm development in 'breathtaking views' from the tops of the downs. Due regard to the statutory purpose of the SDNP has been had through the project design process, which has reduced adverse effects on the 'breathtaking views' and 'stunning, panoramic views to the sea' defined in Special Quality 1. The spatial extent of the Rampion 2 array area has been reduced and designed according to a set of seascape, landscape and visual impact assessment (SLVIA) specific design principles, which are set out in Section 15.7 of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** and the **SLVIA Maximum Design Scenario and Visual Design Principles Clarification Note (Document Reference 8.35)** (submitted at Deadline 1), which provides further commentary on these SLVIA specific design principles. In summary, the area to the east of Rampion 1 has been avoided with the Rampion 2 WTGs array focused to the south and west of Rampion 1 wind farm (see section 3.2 within **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** which describes the offshore array site selection). These areas are further offshore at greater distance from the Sussex Heritage Coast of the SDNP, while also having a narrow additional lateral spread in the field of view. A clear line of sight between Rampion 1 and 2 arrays also ensures that it appears as a distinct array with less contrast and a degree of balance with Rampion 1. Although some significant effects on views from the SDNP have been identified in the assessment, effects of major significance in environmental impact assessment (EIA) terms have been avoided on the Sussex Heritage Coast area of the SDNP. It is the conclusion of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** (paragraphs 15.15.9 – 15.15.40) and the position of the Applicant, that Rampion 2 will not compromise the statutory purpose of the SDNP designation. Further justification and clarification with regards the matter of statutory purpose of the SDNP and effects on special qualities of the SDNP is set out in **Appendix 5 – Further information for Action Point 27** (Document Reference 8.25.5) submitted at Deadline 1.
2.4.3	**Landscape and Visual Impact Assessment (Onshore)** The effects on landscape character throughout the construction period, as well as beyond, are considered to have been underestimated. This includes the effects on tranquillity and those caused by noise and lighting. Importantly, the visual assessment insufficiently reflects the impacts on receptors within and looking into the National Park. Insufficient mitigation - and no compensation – has been put forward by the applicant to address the harm caused (e.g. the application is not accompanied by a draft S106 legal agreement).	The Applicant disagrees with South Downs National Park Authority's (SDNPA) assertion that the effects on landscape character have been underestimated. The Applicant has undertaken further engagement with SDNPA to explain this further as described below: Although the SDNPA are not specific, they do make reference in the Statement of Common Ground to I3 Arun to Adur Scarp Down: The construction effects on this Landscape Character Area (LCA) are assessed as "Negligible to Zero" in **Appendix 18.3: Landscape Assessment, Volume 4** of the ES [**APP-169**]. As explained in the Statement of Common Ground, this section of the onshore cable

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Ref	Relevant representation comment	Applicant's response
		corridor will be underground during construction due to the use of trenchless crossing techniques (as outlined in **Appendix A Crossing Schedule** of the **Outline of Construction Practice** **[PEPD-033]** secured via Required 22 within the **Draft Development Consent Order** **[PEPD-009])** Therefore, there can be no direct significant effect on this LCA. The only effects will be related to the visibility of the trenchless crossing temporary construction compounds which are located in the adjacent LCAs (A3: Arun to Adur Open Downs and J3: Arun to Adur Scarp Footslopes). Trenchless crossings are identified in Appendix A Crossing Schedule of the **Outline of Construction Practice** **[PEPD-033]** and secured via Required 22 in the **Draft Development Consent Order** **[PEPD-033]**.The assessment examined a 3D model of the onshore cable corridor within the Digital Terrain Model (DTM) to determine specifically the likely visibility of the trenchless crossing temporary construction compounds from areas within the I3 Arun to Adur Scarp Down LCA. This was supplemented with site visits which determined limited visibility due either to landform screening and / or intervening distance. This analysis confirmed the assessment of non-significant effects on this LCA alone. In respect of tranquillity, this is recognised as one of the Special Qualities of the South Downs National Park (SDNP) and an assessment of the relevant Special Qualities is assessed in **Appendix 18.3: Landscape Assessment, Volume 4** of the ES **[APP-169]**. The assessment takes account of the landscape effects on landscape character and elements including any perceptual qualities such as tranquillity that are noted as a key characteristic and the range of visual effects recorded at numerous receptors across the SDNP and within its setting. This includes reference to noise and lighting. The assessment of Special Qualities identifies a significant effect on Special Quality 3 "*tranquil and unspoilt places*" extending along the geographical extent of the onshore cable corridor and within approximately 250m to 650m of the onshore cable corridor. The **Commitments Register** **[APP-254]** (updated at the Deadline 1) addresses perceptual qualities included as part of the SDNP Special Qualities in commitment C-66 stating: *The Proposed Development will aim to minimise effects on the special qualities of the South Downs National Park and High Weald Area of Outstanding Natural Beauty (AONB) through careful design consideration in terms of scale, size and location, and taking account of the relevant policy and guidance*. In respect of the visual assessment, it is not accepted that the '*visual assessment insufficiently reflects the impacts on receptors within and looking into the National Park'* For example, the LVIA includes a 2km Study Area (2km from the proposed DCO Order Limits), agreed with stakeholders. In addition, ES **Figure 18.4a-c and 18.6b, Volume 3** of the ES **[APP-098-103]** shows an extended zone of theoretical visibility (ZTV) which has not been cropped to the Study Area and a 5km buffer on either side of the onshore cable corridor. There are a total of 60 illustrated, annotated and assessed viewpoints along the onshore cable corridor at varying distances also agreed through consultation, including 29 within the SDNP and others within the setting that view both towards the SDNP and from within the SDNP viewing out. The LVIA includes visual assessment of settlements, transport routes, National Trails, public rights of way (PRoWs), Open Access Land and tourist / visitor attractions within the Study Area that are overlapped by the ZTV and have the potential to be significantly affected. A number of these receptors included in the assessment such as the South Downs Way, other PRoWs, Open Access Land and transport routes that cross the boundary of the SDNP and or view into the SDNP or out from the SDNP.

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Ref	Relevant representation comment	Applicant's response
		The Applicant will continue to engage with SDNPA on these points.
2.4.4	**Lessons Learned from Rampion 1 Offshore Wind Farm** Much has been made by the applicant of the success of the reinstatement of the Rampion 1 onshore cable corridor in the application, however the SDNPA's experience (which it will evidence at the examination) has been that whilst some areas have been successfully reinstated, other elements still cause harm to the landscape many years later. There have also been issues regarding the ongoing maintenance and management of the corridor, again which is causing harm to the SDNP.	The Applicant cannot comment on the reinstatement of land following the Rampion 1 works as this is not a matter for this DCO Application. The methodologies that will be used to ensure construction (including restoration) is undertaken in a sensitive and appropriate way can be found in the **Outline Construction Method Statement** **[APP-255]**, the **Outline Code of Construction Practice** **[APP-224]**, and the **Outline Landscape and Ecology Management Plan (LEMP)** **[APP-232]**. These documents are secured under Requirements 12, 22 and 23 of the **Draft Development Consent Order** **[APP-019]**.
2.4.5	**Terrestrial Ecology and Nature Conservation (Chapter 22 of Environmental Statement)** The landscape-scale ecological effects are considered to have been inadequately assessed, particularly in assessing the direct and indirect effects of removing potential important linear features from the landscape. We are also concerned that insufficient evidence has been provided to demonstrate the likely significant impact of Horizontal Directional Drilling on the hydrology, soil structure and geology of ancient woodland, chalk streams and chalk grassland habitats. Overall, it is considered there are large areas of missing survey data that are needed to support the assertions made in respect of ecology and nature conservation.	The terrestrial ecology field surveys classify the habitats present and identify the presence and potential presence of legally protected species (see Table 22-11 of **Chapter 22: Terrestrial ecology and nature conservation**, **Volume 2** of the ES **[APP-063]**). Although it is acknowledged that 100% coverage is not achieved for survey due to land access restrictions (see Table 22-12 of **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES [**APP-063**]), this is common with large infrastructure projects. Further, this does not undermine the assessment as sufficient information is available to understand the baseline. For example, bats are known to be present across the length of the onshore cable corridor, the range of bats identified is consistent with desk study records, their distribution is common with general understandings of bats habitat preferences and levels of activity are understood (see **Appendix 22.8: Passive and active bat activity report**, **Volume 4** of the ES **[APP-186]**). Trenchless crossing (for example horizontal directional drill (HDD)) is a mitigation that has been used routinely for linear projects (electrical transmission cables and pipelines (e.g. gas, oil and water) for both large infrastructure and smaller scale applications. Trenchless crossings have been used frequently to cross a range of sensitive ecological features including designated sites, ancient woodland, rivers and other priority habitats. For example, a trenchless crossing of 550m through chalk substrate, with a sizeable change in elevation (80 to 90m difference) was successfully completed at Dunstable Downs on the Kensworth to Rugby Pipeline project for CEMEX in 2008 (including crossing part of Dunstable and Whipsnade Downs Site of Special Scientific Interest). It is also notable that HDD within chalk substrate was carried out successfully on the route of the transmission cable for the Rampion 1 Offshore Wind Farm. The approach to minimising and effectively managing the risks of trenchless crossings is outlined in the **Outline Construction method statement** **[APP-255]** and the **Outline Code of Construction Practice** **[PEPD-033]** as secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**.
2.4.6	**Transport and Rights of Way** The SDNPA has concerns regarding the impact on the local highway network during construction for both the onshore and offshore aspects of development, and the Public Rights of Way Network within the National Park.	A detailed assessment of the environmental effects of construction traffic has been completed as documented In the **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**. The scope and methodology of this assessment was agreed with West Sussex County Council and National Highways during pre-DCO Application stakeholder engagement. This assessment outlines that during the construction phase, when taking account of embedded measures such as the **Outline Construction Traffic Management Plan** **[PEPD-035]** (secured via Requirement 24 in the **Draft Development Consent Order** **[PEPD-009]**) and **Outline Public Rights of Way Management Plan** **[APP-230]** (secured via Requirement 20 in the **Draft Development Consent Order** **[PEPD-009]**), the Proposed Development will not result in significant effects to transport receptors.

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Ref	Relevant representation comment	Applicant's response
		The **Outline Public Rights of Way Management Plan [APP-230]** (secured via Requirement 20 in the **Draft DCO [PEPD-009]**) describes how Public Rights of Way impacted by the construction phase can be managed and mitigated where appropriate.
2.4.7	**Historic Environment** The area between (and including) Blackpatch Hill and Harrow Hill forms a rich and complex multi-period prehistoric landscape of national significance. The selection of this route was flagged as being of significant concern during the consultation stage given the area constitutes some of the earliest evidence of industrial activity in Britain. Although mitigation is proposed, it is considered that this has still under-estimated and under-represented the potential for this dry valley in the context of the landscape setting and known archaeological sites in the area. Given the extremely high potential for archaeology of national significance it is considered further works need to be undertaken prior to the determination of the application.	The onshore cable route selection process took into consideration the potential for archaeological remains of high heritage significance to be present across all alternative routes, as evidenced by available baseline data and reflected in the archaeological notification areas. This was balanced against other criteria as described in **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**. The assessment presented in **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]** is based on a worst case scenario. Therefore, the Applicant considers that further investigation would not change the outcome of the assessment. Taking a landscape approach and considering all available desk-based and geophysical survey data, **Chapter 25: Historic environment, Volume 2** the ES **[PEPD-020]** identifies a high potential for archaeological remains of high heritage significance within the area of the South Downs. Commitments C-225 (updated by the Applicant within the **Outline Code of Construction Practice [PEPD-033]** (submitted at the Procedural A Deadline)) and C-79 in the **Commitments Register [APP-254]** (updated at the Deadline 1 submission) provide for mitigation through design and archaeological recording. Commitments C-79 and C-225 would be secured within The **Outline Onshore Written Scheme of Investigation (WSI) [APP-231**], which would itself be secured by Requirement 19 of the **Draft Development Consent Order [PEPD-009**]. Further consultation is currently being undertaken with the WSCC Archaeologist and Historic England on the Outline WSI and a revised version will be submitted at Deadline 3. The **Outline Onshore WSI [APP-231]** sets out the methodological approach for archaeological investigations which ensures further investigation will be undertaken prior to construction.

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Table 2-5 Applicant's Response to Horsham District Council

Ref	Relevant representation comment	Applicant's response
2.5.1	1.1 Horsham District Council ('HDC') supports renewable energy generation and carbon reduction objectives to meet climate change commitments. However, as a Host Authority, HDC has some concerns regarding mitigations and enhancements associated with environment impacts, particularly regarding nature conservation and biodiversity and green infrastructure assets and impacts to residents and businesses given potential disruption during the construction phase, particularly regarding air quality and noise. HDC will continue to engage with the Applicant to ensure that should the DCO be granted, that social, economic, and environmental benefits are delivered.	The Applicant notes and welcomes Horsham District Councils (HDC's) support for renewable energy projects. The acknowledgement that Proposed Development will contribute to provision of green energy is welcomed by the Applicant. The Proposed Development will help meet the urgent need for new renewable energy infrastructure in the UK and supporting the achievement of the UK Government's climate change commitments and carbon reduction objectives. The Proposed Development type is recognised as being a critical national priority in the revised NPS EN-1 (Department for Energy Security and Net Zero (DESNZ), 2023a) and NPS EN-3 (DESNZ, 2023b), which came into force in January 2024 and are considered to be relevant to the determination of the DCO Application. This additional generating capacity will contribute towards meeting the urgent need for new energy infrastructure in the UK, provide enhanced energy security, support the economic priorities of the UK Government and, critically, make an important contribution to decarbonisation of the UK economy. The Proposed Development will contribute materially towards meeting the urgent national need for renewable electricity, significantly reducing carbon emissions from energy. The assessment set out in **Chapter 29: Climate change, Volume 2** of the ES **[APP-070]** concludes the Proposed Development has a lifetime greenhouse gas (GHG) emissions saving of 35,901 kilotonne carbon dioxide equivalent ($ktCO_2e$). The Proposed Development will continue to offset greenhouse gas (GHG) emissions until 2050, and therefore make a positive contribution the UK Government target to reach net zero emissions in 2050. The Applicant notes the comments on air quality and noise and responses can be found on these topics at **references 2.5.51** to **2.5.54** and **references 2.5.55** to **2.5.75** respectively below.
2.5.2	1.2 HDC is the planning authority for Horsham District, except for the area of the district within the South Downs National Park. West Sussex County Council is the highways authority and Lead Local Flood Authority and Minerals and Waste Authority that covers Horsham District. The initial principal areas of concerns set out below therefore relate primarily to the administrative area and remit of responsibility of Horsham District Council. WSCC will also lead on archaeology given their in-house expertise on this matter.	The Applicant has no further comments on this matter at this time.
2.5.3	**1.3 Draft Development Consent Order and Securing Mitigation.** Horsham District Council (HDC) has concerns across several topic areas to the lack of commitment and securing mechanisms of mitigation, monitoring and compensation. It is not always evidently demonstrated that mitigation/compensation is captured in a securing mechanism and the Commitments Register appears more aspirational rather than embedded environmental measures.	The **Commitments Register** **[APP-254]** (updated at Deadline 1 submission) includes a column for the securing mechanism for each embedded environmental measure and its related commitment reference. This cross-refers to the mechanism, for example a requirement in the **Draft Development Consent Order** **[PEPD-009]** Schedule 1 Part 3. Where there is an accompanying document such as an outline plan submitted with the DCO Application with which works must be undertaken in accordance with, this is also referred to under the 'Relevant Application Documents' column. The Applicant has provided an update to the **Commitments Register** **[APP-254]** at Deadline 1 to include further detail e.g. the full reference to DCO requirements and addition of the location of further information within the Application documents.

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		An amendment has been made to Schedule 14 of the **Draft Development Consent Order [PEPD-009],** given effect by Article 46, to allow local planning authorities to charge for requirement discharge.
2.5.4	**1.4 Socio-economics and Transport.** The Outline Skills and Employment Strategy (OSES) has limited detail and HDC is not listed as a consultee to this document. HDC is excepting to be a recipient and consultee regarding benefits given the adverse effects the district will experience during construction. The OSES is very high level and supporting existing local business is not included as an objective. The Community Benefits Package is treated as being divorced from the OSMS but there is opportunity for these to be aligned to assist in mitigation. HDC shares and supports the overarching concerns raised on highways and traffic impacts in particular regard to lack of sufficient mitigation including with the Outline Construction Traffic Management Plan, and with regard to mitigations for the purposes of managing traffic through the AQMA and Cowfold to minimise disruption to traffic flow impacts along the A272, and as identified as Principal Issues of Disagreement by WSCC in their capacity as responsible Local Highway Authority.	The **outline Skills & Employment Strategy (oSES) [APP-256]** was intentionally high-level and the Applicant was not in a position to document concrete commitments without further consultation with key skills & employment stakeholder organisations in Sussex. The first tranche of consultation took place between July and October 2023, the results of which have fed into the second iteration of the **oSES [PEPD-037]**, submitted to the Examining Authority (ExA) at the Pre-Examination Procedural Deadline A (16 January 2024). This latest version of the **oSES [PEPD-037]** includes seven additional key skills & employment stakeholder organisations, including Horsham District Council, alongside Arun and Adur & Worthing Councils, educational institutions and Gatwick Airport. Following this series of consultation meetings and the examination itself, the Applicant will produce a final Skills & Employment Strategy (SES) outlining key objectives and activities, which is likely to include details regarding an apprenticeship scheme and engagement with educational institutions. Supporting existing local business is integral to the ultimate delivery of skills and employment objectives which will be set out in the final SES. The **oSES [PEPD-037]** already documents the intended industry leadership in this area in Section 16, Page 13, which sets out two related initiatives: • Encouraging and supporting growth and employment in local supply chain companies; and • Increasing visibility of local Small and Medium-sized Enterprises (SMEs) within the employment market. Community benefits are not a legal or policy requirement and are quite distinct from the consenting process, a point reiterated in the Government (Department for Energy Security and Net Zero) response to the consultation on Community Benefits for Electricity Transmission Network Infrastructure (Dec 2023), which stated: *"The proposals on community benefits for electricity transmission network infrastructure discussed within this document will remain separate to the planning process. It will not be a material consideration in planning decisions, and not secured through those decisions."* That said, Rampion 2 will be a permanent neighbour in the Sussex community and the Applicant intends to develop and implement a community benefits package of proposals. In the second half of 2024, the Applicant will therefore be consulting key stakeholders and local communities on how a community benefit package could best support Sussex communities. The final package may include a range of initiatives to benefit business, education and residential communities.

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Ref	Relevant representation comment	Applicant's response
		The **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** contains details of required construction traffic routing for the Proposed Development. Where possible HGV traffic has been routed via the A23 and from the east along the A272 avoiding Cowfold. Heavy goods vehicle (HGV) traffic has been minimised as much as possible as detailed in paragraph 1.2.5, Commitment C-157 and C-158 **Commitment Register** **[APP-254]** which has been updated at Deadline 1. The Applicant has assessed effects on the Cowfold AQMA as negligible in **Chapter 19: Air quality, Volume 2** of the Environment Statement (ES) **[APP-060]**, and in a further sensitivity test in the **Chapter 32: ES Addendum, Volume 2** of the ES **(Document reference: 6.2.32)**. Further information regarding the traffic and air quality assessments has been provided in response to **reference 2.3.46** below.
2.5.5	**1.5 Terrestrial Ecology and Nature Conservation.** HDC has concerns on the lack of demonstration of water neutrality, lack of clarity on mitigation, compensation, and terrestrial biodiversity net gain, and feasibility of habitat creation at Oakendene substation site. HDC shares and supports the overarching concerns raised on terrestrial ecology and nature conservation impacts, and as identified as Principal Issues of Disagreement, by WSCC.	This is noted as a summary comment and the specific issues summarised are addressed by the Applicant in **references 2.5.24** (water neutrality), **2.3.25** (biodiversity net gain) and **2.3.28** (habitat creation at the onshore substation at Oakendene).
2.5.6	**1.6 Landscape and Visual Assessment.** Concern is expressed in the lack of clarity on the delivery of advanced planting with the Outline Landscape and Ecology Management Plan, particularly (but not limited to) advanced and existing hedgerow management arrangements and how some mitigation measures are to be monitored and action including the reinstatement of hedgerows. Additionally, issue is raised with the consistently applied to the execution of the Landscape and Visual Impact Assessment methodology regarding receptors. This might mean that a potentially significant effect will be overlooked if effects are diluted down due to their limited geographical extents. These include visual receptors at Washington recreation ground. Key visual receptors are being assessed as part of a group and not being given dure consideration to reflect the actual likely effects experienced by those receptors. Landscape features at Oakendene substation are not described and assessed within the core assessment of effects, but rather dealt as part of the character area. This overlooks the actual likely effects on the landscape features as receptors in their own right, and the need arising from the LVIA to refine and fix more precise parameters to the development of the Oakendene substation site is identified. These are key and heavily relied upon to the success of the Project's embedded environmental measures and proposed mitigation measures on the LVIA conclusions.	The Indicative Landscape Plan (ILP) for the onshore substation at Oakendene and its design principles are set out in the **Design and Access Statement (DAS)** **[AS-003]** and further expanded on in the **Outline Landscape and Ecology Management Plan (LEMP)** **[APP-232]**. The ILP in Appendix D shows indicative areas for advance planting see key and design principles committing to maximising opportunities for advanced planting. With respect to advance planting, this is secured by the design principles for in the **DAS** **[AS-003]**. As per the design principles in the bullets after paragraph 3.3.10 of the **DAS** **[AS-003]**, the stage specific Landscape and Ecological Management Plan (LEMP) will include a "*landscape programme, according to relevant planting seasons, maximising opportunities for advance planting prior to construction to allow trees to mature during the construction works and in advance of completion of the onshore substation*." Further advance planting is to be provided for ecological mitigation as per the bullets after paragraph 3.5.6, "*Advance planting will be provided along the western extent of the Oakendene onshore substation site to provide mitigation for the loss of dormouse habitat* ". Requirement 8 (2) of the **Draft Development Consent Order** **[PEPD-009]** requires detailed design for the substation to accord with the principles established in the **DAS** **[AS-003]**. The Applicant is considering possible amends to the **DAS** **[AS-003]** as a result of matters raised at the Issue Specific Hearing 1 in February 2024. Further information on advanced planting is provided in paragraph 2.6.4 of the **Outline LEMP** **[APP-232]** which states "*A programme of landscape works will be provided setting out the programme according to relevant planting seasons and maximising opportunities for advance planting prior to construction to allow trees to mature during the construction works and in advance of completion of the onshore substation. Some of the landscaping will be established prior to the beginning of construction (advance planting), with the remainder being delivered following the completion of the substation and the decommissioning of temporary construction compounds*."

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		The LEMP is secured through Requirements 12 and 13 of the **Draft Development Consent Order** **[PEPD-009]**. The Applicant has discussed this matter with Horsham District Council (HDC) and welcomes their constructive advice. Hedgerow management along the A272 is included in the **DAS** **[AS-003]** secured via Requirement 8 within the **Draft Development Consent Order** **[PEPD-009]** and **Outline LEMP** **[APP-232]** to increase screening, subject to requirements for visibility splays. The Applicant will endeavour to ensure that further planting immediately south of the hedgerows along the A272 is included as advance planting to further increase the screening potential of views along the A272. This aligns with the existing design principle to maximising opportunities for advanced planting. The landscape and visual impact assessment (LVIA) in **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** is supported by its appendices and should be read as a whole: • **Appendix 18.1: Landscape and visual impact assessment methodology, Volume 4** of the ES **[APP-167]** • **Appendix 18.2: Viewpoint Analysis, Volume 4** of the ES **[APP-168]** • **Appendix 18.3: Landscape Assessment, Volume 4** of the ES **[APP-169]** • **Appendix 18.4: Visual Assessment, Volume 4** of the ES **[APP-170]** • **Appendix 18.5: Residential Visual Amenity Assessment, Volume 4** of the (ES) **[APP-171]** • **Appendix 18.6: Viewpoint directory, Volume 4** of the ES **[APP-172]** The Applicant does not agree with HDC's assertion that "*a potentially significant effect will be overlooked if effects are diluted down due to their limited geographical extents*". The landscape and visual effects (and whether they are significant) are determined by an assessment of the nature or 'sensitivity' of each receptor or group of receptors and the nature of the effect or 'magnitude of change' that will result from the onshore elements of the Proposed Development as described in **Appendix 18.1: Landscape and visual impact assessment methodology, Volume 4** of the ES **[APP-167]**. In determining the magnitude of change, the assessment takes account of the size and scale of the proposed change and the geographical extent. Other factors regarding the nature of the effect such as the duration of change and whether the effect is cumulative are also noted. This approach as set out in Appendix 18.1 accords with the Landscape Institute and Institute of Environmental Management and Assessment (IEMA) (2013) Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA 3). Therefore, it is reasonable and accords with guidance for a limited geographical effect to be determined as not significant. However, exceptions would arise if the sensitivity of the receptor is higher, or the scale or magnitude of change is also higher. In that case the level of effect may also be judged as significant, despite a limited geographical extent. An example of this is the effect of the onshore substation at Oakendene on the host landscape

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		character, the J3 Cowfold & Shermanbury. The sensitivity of this landscape is assessed as Medium-high and although the geographical extent of the likely significant effects is relatively small, due to the screening of existing vegetation which is to be retained, the magnitude and scale of change is considered to be high. In combining all of these factors together, the LVIA has concluded that this landscape would be significantly affected by the Proposed Development. The settlement assessment contained in **Appendix 18.4: Visual Assessment, Volume 4** of the ES **[APP-170]** assesses the visual effects of the settlement and includes consideration of residential areas, the public realm and public open spaces within the settlement boundaries that will be frequented by people. In this sense it is a 'grouped' assessment, the approach of which accords with GLVIA3 as explained in paragraph 6.13 where visual receptors are defined as "*the people within the area who will be affected by the changes in views and visual amenity - usually referred to as 'visual receptors'. They may include people living in the area, people who work there, people passing through on road, rail or other forms of transport, people visiting promoted landscapes or attractions, and people engaged in recreation of different types*." Nonetheless, the assessment highlights the areas of greatest visual effects and the particular receptors affected within that group. The landscape assessment includes an assessment of the landscape character, its key characteristics and the constituent elements or features (which includes trees). The assessment makes specific reference to the loss of individual trees and hedgerow trees within the footprint of the onshore substation and assess a High magnitude of change and a Major and significant effect on the landscape character and landscape elements (trees / field trees / hedgerows with trees hedges etc.). Further assessment of individual landscape elements would not alter the findings or conclusions of the LVIA that the effects would be significant. These elements are also assessed within **Appendix 16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]**. The loss of these features has been recognised as part of the Biodiversity Net Gain (BNG) as set out in **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES **[APP-193]**. The **Draft Development Consent Order** **[APP-019]** has requirements 12, 13,14 and 22 securing mitigation, compensation and BNG. Summary assessment Tables 18.40-45 presented in **Chapter 18: Landscape and visual Impact, Volume 2** of the ES **[APP-059]** set out how mitigation including reinstatement will reduce the effects over time. The assessment of residual effects is a requirement of the environmental impact assessment (EIA) process in line with *The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017*. Please see **reference 2.5.28** below with respect to Washington recreation ground The LVIA methodology has been consistently applied. Further clarification is sought from HDC, and the Applicant will continue to engage with HDC on these points.
2.5.7	**1.7 Noise and Air Quality.** HDC is concerned regarding the adequacy of the noise and air quality assessments which both potentially underestimate the impacts arising from construction and operation phase	In relation to onshore noise, please refer to more detailed responses to **references 2.5.57** below (construction phase noise) and **2.5.71** below (operation and maintenance phase noise)

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	effects. HDC has concerns regard the modelling of the noise sources, adequacy of the assessment of background noise levels, omissions from the assessment and validity of the assessment method. There is inadequate consideration of the Air Quality and emissions mitigation guidance for Sussex (2021) and insufficient robust mitigations pertaining to the Cowfold Air Quality Management Area.	**Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** has considered the Air Quality and Emissions Mitigation Guidance for Sussex (Mid Sussex District Council, 2021) in defining the scope of the assessment and in particular the extent of any construction traffic modelling required for the Proposed Development. The Applicant concludes no significant effects on air quality are likely and does not consider that the Proposed Development meets the criteria set out in the Sussex Guidance for an air emissions mitigation strategy. However, recognising Horsham District Council's concerns, the Applicant is preparing an Air Quality Mitigation Plan in accordance with the Sussex Guidance.
2.5.8	**1.8 Water Environment.** HDC shares and supports the overarching concerns raised on water environment impacts to the design for the operational drainage at the Oakendene Substation works and that the current FRA and design proposals for the Oakendene Substation do not truly reflect the winter flooding that occurs at this location and as identified as Principal Issues of Disagreement by WSCC in its capacity as responsible LLFA.	Flood risk at the onshore substation site is considered to ensure the Proposed Development is able to operate as planned, as referred to in Section 6.5.12 of the **Appendix 26.2: Flood Risk Assessment (FRA), Volume 4** of the Environmental Statement (ES) **[APP-216]**. The indicative onshore substation site layout has been developed accordingly, taking risk of flooding into account. The Applicant is confident the precautionary approach in the **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]** and **Design and Access Statement** **[AS-003]** will ensure the onshore substation will not be at flood risk, nor increase flood risk elsewhere (addressed through the adherence to National Grid Target Guidance (C-230) secured via the **Design and Access Statement** **[AS-003]** and Requirement 8 within the **Draft Development Consent Order** **[PEPD-009]**. The Operational Drainage Plan must accord with the **Outline Operational Drainage Plan** **[APP-223] and will be** secured via requirement 17 within the **Draft Development Consent Order** **[PEPD-009]**. The assessment of flood risk and outline design was prepared in accordance with West Sussex County Council (WSCC) and Horsham District Council (HDC) advice, as recorded in meeting minutes included in Annex A of the **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]**. As outlined in the **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]** the onshore substation at Oakendene is situated within Flood Zone 1 (low probability of flooding). The main sources of flood risk at the onshore substation site are fluvial and surface water flood risk in nature, associated with run-off due to the clayey ground conditions. The approach to assessment of fluvial flood risk from the ordinary watercourse to the south of the onshore substation site was agreed with the Lead Local Flood Authority (LLFA) (WSCC) and the Local Planning Authority (HDC) during a consultation meeting on 22 June 2022. It was agreed that the 0.1% Annual Exceedance Probability (AEP) flood extent (defined by the Environment Agency Risk of Surface Water mapping) was a suitably precautionary proxy for the 1% AEP plus a climate change allowance for the operational period (2030 to 2060). HDC flood officer commented that as long as the onshore substation was positioned outside of the 0.1% AEP extent he would not be concerned. He also advised that no HDC records of historical flooding indicated flood incidents at the onshore substation site at Oakendene. No advice to the contrary was provided by WSCC as recorded within the meeting minutes presented in Annex A of **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]**.

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		Surface water flood risk indicated in Figure 26.2.6a of **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]** would be adequately dealt with via the drainage infrastructure for the onshore substation site, as set out in the **Outline Operational Drainage Plan** **[APP-223]**. As set out in paragraphs 2.4.10 to 2.4.13 of the **Outline Operational Drainage Plan** **[APP-223],** there is significant flexibility in how the final design of the onshore substation could be delivered. Therefore, there is deemed to be sufficient flexibility within the current **Outline Operational Drainage Plan** **[APP-223]** such that it can be revised and adapted at the detailed drainage design phase to address any concerns regarding winter flooding and associated loss of basin storage. As stated in paragraph 6.5.6 of the **Appendix 26.2: Flood Risk Assessment (FRA), Volume 4** of the ES **[APP-216]**, final design and sizing of drainage mitigation measures will be determined at the detailed drainage design stage in liaison with WSCC (as Lead Local Flood Authority (LLFA)). The final Operational Drainage Plan must be approved prior to the works to construct the onshore substation in accordance with Requirement 17 of the **Draft Development Consent Order** **[PEPD-009]**. At present the comments made in relation to 'winter flooding' are unclear and lack details about location, flood mechanism and timing. The Applicant requested further details and any supplementary data from WSCC and HDC on 08 February 2024, and will continue to carry out engagement with both stakeholders during the examination phase. Nonetheless the Applicant considers that any additional winter flooding information identified by WSCC in their Representation reference 2.3.43 can be factored into the detailed drainage design. The outline drainage strategy presented within the **Outline Operational Drainage Plan** **[APP-223]** is based on several conservative assumptions (regarding the maximum design parameters for the substation, impermeability and climate change allowance).
2.5.9	**2 Introduction** 2.1 This Relevant Representation ('RR') is submitted by Horsham District Council ('HDC') in respect of the application by Rampion Extension Development Limited ('the Applicant') for a Development Consent Order ('DCO') for the Rampion 2 Offshore Windfarm Project ('the Project'). HDC is a Host Authority as classified by the Planning Act 2008. This RR is accompanied by HDC's initial draft (version 1) Principal Area of Disagreement Summary Statement ('HDC PADSS'). 2.2 Although HDC is a 'B' Authority in the Development Control Order ('DCO') process it is not intended that its RR duplicates that of West Sussex County Council (WSCC) in its responsibilities as Local Highway Authority, Local Lead Flood Authority, and Minerals and Waste Authority. 2.3 Accordingly, WSCC in its own RR will consider the finer details related to concerns related to transport and traffic, flood risk and drainage, and minerals and waste. Where there is common ground HDC's RR is intended to compliment the WSCCs on these matters, and primarily address concerns from the district planning authority's remit. 2.4 Equally, the South Downs National Park Authority (SDNPA) is the Planning Authority for the National Park area of Horsham District, and the planning needs for this area will be	2.1 – The Applicant welcomes Horsham District Council as an interested party and the provision of the initial draft of their Principal Area of Disagreement Summary Statement. 2.2 – The Applicant appreciates the effort to not cause duplication with West Sussex County Council (WSCC) on these points. 2.3 – The Applicant has provided a response to WSCC RR, please see **Table 2-3**, **reference 2.3.29** to **2.3.34** and **2.3.42** to **2.3.44**. 2.4 – The Applicant appreciates the effort to not cause duplication with South Downs National Park Authority (SDNPA) on these points. The Applicant has provided a response to SDNPA RR, please see **Table 2-4**. 2.5, 2.6, & 2.7 – The Applicant has no further comments on this matter at this time.

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	set out by the Park Authority. It is therefore not intended that this RR duplicate that of the SDNPA in its responsibility for planning for this area. Where there is common ground HDC's RR is intended to compliment the SNDPAs on these matters, and primarily address concerns from the district planning authority's remit. 2.5 This RR relates only to onshore impacts of the proposed development as it affects the administrative area of Horsham District Council (HDC). 2.6 Specifically, it describes the impact of the proposed development within the administrative area of Horsham District (as described in Chapter 4: The Proposed Development, Volume 2 of the Environmental Statement (ES), namely: Buried onshore cables in a single corridor using trenching and backfilling installation techniques and trenchless and open cut crossings. A new onshore substation, proposed near Cowfold, which will connect to an extension to the existing National Grid Bolney substation, via buried onshore cables. 2.7 This Relevant Representation is structured firstly, with a setting out of the district context and then under relevant topic-based headings (split by discipline as detailed and ordered in the Applicant's ES).	
2.5.10	**3. District Context** Character 3.1 Horsham District is located within the northwest part of West Sussex. The district is predominantly rural in character and contains several small villages and towns. 95km2 (36.49 square miles) of the district falls within the South Downs National Park. 3.2 The onshore cable corridor would pass through several National Character Areas (NCA) on route through Horsham District. This includes the Low Weald (NCA) that comprises of a mosaic of irregular pastoral and arable fields enclosed by a strong framework of mature trees, woodland shaws and Ancient Woodlands, which makes a significant 4 contribution to district character. Two Valued Landscapes in the district are of national importance: the High Weald Area of Outstanding Natural Beauty covering the eastern part of the District and the South Downs National Park in the southern part. The cable corridor would pass through the latter. 3.3 Habitats and species found across the Development Area is varied, including arable, and grassland as well as rivers and associated environments but a key characteristic is the network of woodland blocks (some Ancient and Semi-Natural) and dense hedgerows linking wildlife habitats across the district. The south-west of the district provides an important feeding ground for the internationally important Barbastelle bats. The Arun Valley floodplain is a distinctive habitat of both national and international importance within the district. 3.4 The Development Area itself is largely rural countryside, mostly in agricultural use and managed rural estate, but sections of the cable corridor would pass close by settlements and their valued open space and green infrastructure, including the villages of Washington,	The Applicant has no further comments on this matter at this time.

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	Storrington and Sullington, and Cowfold. The latter is near to where the cable route would terminate to form a new substation to connect to the existing National Grid substation at Bolney. Economy and Housing 3.5 The rural surroundings of the district support a rural economy. Additionally, employment opportunities in the district are generated from leisure, tourism, and retail businesses. The majority of Horsham District is located within the Gatwick Diamond economic area. Transport access and ease of movement is a key factor in the performance of the local economy, enabling residents to travel to their place of work, and allow the movement of goods and services. The A272 crosses the northern part of the Parish. Within the district, it runs in a broadly west-east direction from Billingshurst to Haywards Heath. The A24 runs in a north-south direction down the western side of the district and crosses the A272 to the north. 3.6 The Cowfold Road (A272) is a key local distributor, taking traffic east-west across the district and linking several other strategic road networks (A23 to the east and the A24 to the west) with quieter, rural lanes. At Cowfold, the natural restriction created by the staggered A272/A281 junction, combined with the volume of traffic using the A272 as a major link road, results in significant standing traffic during morning and evening peak periods. This is reflected in congestion being raised as a key issue by the community. 3.7 The district has seen a significant development in recent years with strategic-scale housing schemes under construction particularly in the northern and central parts of the district. The larger settlements have also accommodated developments of scale in recent years, however, pressure for housing development remains. Environmental Quality and Climate Change - Water Neutrality 3.9 Horsham District is in an area of serious water stress, as identified by the Environment Agency Water Stressed Areas Classification. Horsham District is supplied with water by Southern Water from its Sussex North Water Resource Zone. This supply is sourced from abstraction points in the Arun Valley, which includes locations such as Amberley Wild Brooks Site of Special Scientific Interest (SSSI), Pulborough Brooks SSSI and Arun Valley Special Protection Area/Special Area of Conservation and Ramsar site. In September 2021, the council received a Position Statement from Natural England. The Natural England position is that it cannot be concluded that existing abstraction within the Sussex North Water Supply Zone is not having an impact on the Arun Valley sites. It advises that development within this zone must not add to this impact. - Nature Conservation and Biodiversity 3.10 The District benefits from a high-quality natural environment, some of which is designated for its international and national importance (including the Arun Valley SPA and The Mens SAC and its qualifying feature of Barbastelle bats). However, alongside much of the UK, biodiversity has been impacted by changing land management practices, increased pressure for development and climate change. In this regard, HDC is working	

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	with the Sussex Wildlife Trust in a five-year partnership called Wilder Horsham District. The main objective of this partnership is to deliver a Nature Recovery Network which will seek to reverse the decline in species and habitats and enrich the district's natural environment. - Air Quality 3.11 There is a high reliance on car travel in the district. In addition to traffic congestion, this also contributes to emissions of air pollutants. The district has two Air Quality Managements Areas (AQMAs) within 5km of the onshore cable corridor; Storrington Air Quality Management Area (declared in 2010) and Cowfold Air Quality Management Area (declared in 2011). HDC has declared the whole of the district an 'Emission Reduction Area' and is a member of the Sussex Air Quality Partnership. Monitoring of air quality in the district has revealed that some areas have high levels of nitrogen dioxide and therefore a key consideration for the Council is the impact of development on air quality. 3.12 Cowfold is a location where an Air Quality Management Scheme is in operation. The natural restriction created by the staggered A272/A281 junction, combined with the volume of traffic using the A272 as a major link road, results in significant standing traffic during morning and evening peak periods. The Cowfold Air Quality Management Area (AQMA) was designated in December 2011. - Climate Change 3.13 In June 2023, Horsham District Council declared a Climate and Ecological Emergency for the Horsham District. The declaration of a Climate and Ecological Emergency will strengthen and further enable the Council to move forward with its carbon neutral agenda, enabling it to achieve its own carbon neutral target for 2030 and the Horsham District carbon neutral target for 2050. HDC has produced a draft Climate Action Strategy to support the whole of Horsham District to become carbon neutral by 2050.	
2.5.11	4. Climate Change 4.1 The proposed wind farm would generate a significant amount of electricity from a renewable source, meeting the energy needs of many homes. A grid connection offer in place means the scheme could make an early and significant contribution to the objectives of the Council's draft Climate Action Strategy (March 2023).	The acknowledgement that Proposed Development will contribute to climate change mitigation is welcomed by the Applicant. The Proposed Development will help meet the urgent need for new renewable energy infrastructure in the UK and supporting the achievement of the UK Government's climate change commitments and carbon reduction objectives. The Proposed Development type is recognised as being a critical national priority in the revised NPS EN-1 (Department for Energy Security and Net Zero (DESNZ), 2023a) and NPS EN-3 (DESNZ, 2023b), which came into force in January 2024 and are considered to be relevant to the determination of the DCO Application. This additional generating capacity will contribute towards meeting the urgent need for new energy infrastructure in the UK, provide enhanced energy security, support the economic priorities of the UK Government and, critically, make an important contribution to decarbonisation of the UK economy. The Proposed Development will contribute materially towards meeting the urgent national need for renewable electricity, significantly reducing carbon emissions from energy. The assessment set out in **Chapter 29: Climate change, Volume 2** of the ES **[APP-070]** concludes the Proposed Development has a lifetime greenhouse gas (GHG) emissions saving of 35,901 kilotonne carbon dioxide equivalent ($ktCO_2e$). The Proposed Development

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		will continue to offset greenhouse gas (GHG) emissions until 2050, and therefore make a positive contribution the UK Government target to reach net zero emissions in 2050.
2.5.12	4.2 It is important to continue to manage development and change within the district, considering both the effect that the development would have on the character and appearance of the area and mitigating the environmental impact of new development both at the time of construction and in the future, as well as the need for infrastructure requirements to meet the Council's Climate Action Strategy. It is preferable to do this in a proactive way rather than a reactive way.	Horsham District Council's (HDC) Climate Action Strategy is a policy document which has informed both the greenhouse gas (GHG) Assessment and Climate Change Resilience Assessment in **Chapter 29: Climate change, Volume 2** of the ES **[APP-070]**. These assessments support the proactive management of the effect that the Proposed Development will have on the climate change and the effect that the changing climate will have on the Proposed Development.
2.5.13	4.3 HDC has declared a Climate Emergency and is committed to reducing carbon emissions. The development of renewable energy is a key means of reducing the district's contribution to climate change. Nonetheless, renewable energy proposals will need to consider the impact that they may have on valued landscapes, including the need to consider views from Valued Landscapes to proposals which lie outside the South Downs National Park or High Weald AONB.	**Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** assesses effects in relation to valued landscapes including nationally designated landscapes, such as the SDNP and High Weald AONB, landscape character areas, and views and visual receptors as set out principally in Sections 18.9 to 18.13, and in more detail in **Appendix 18.3: Landscape Assessment, Volume 4** of the ES **[APP-169] and Appendix 18.4: Visual Assessment**, Volume 4 of the ES **[APP-170]** The design of the onshore elements of the Proposed Development has been an iterative process (see **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**) that has sought to avoid sensitive features in the landscape wherever possible. Strategic principles to the landscape design and approach to embedded environmental measures are presented in Section 18.7 (**Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**).
2.5.14	4.4 The location of the development area within the countryside will have effects on the spatial pattern of development in the district. It will need to be judged whether the development is an appropriate use of land which it proposes to authorise.	Paragraph 2.5.36 of National Policy Statement (NPS) EN-3 (Department of Energy and Climate Change (DECC), 2011b), extant at the time of submission of the Development Consent Order (DCO) Application and against which it will be tested, sets out that a sequential approach to the location of renewable energy should not be applied to the consideration of renewable energy projects (citing the use of giving priority to previously development land as an example). This is replicated in paragraph 2.3.9 of NPS EN-3 (Department for Energy Security and Net Zero (DESNZ), 2023b) (published in November 2023) which took effect in January 2024, and is a relevant consideration in the decision-making process. Paragraph 5.10.3 of NPS EN1 (DECC, 2011a) and paragraph 5.11.3 NPS EN-1 (DESNZ, 2023a), which came into force in 2024, recognises that the use of countryside could be reduced by use of previously developed land but that may not be possible for energy infrastructure. The location, within the countryside, of the onshore cable and grid connection infrastructure that is required as part of a NSIP is therefore implicitly recognised as being appropriate in principle within the NPSs and is therefore an appropriate use of land. Section 104 of the 2008 Planning Act outlines that the DCO Application must be decided in accordance with the relevant NPS (in this case: NPS EN-1 (DECC, 2011a), NPS EN-3 (DECC, 2011b) and NPS EN-5 (DECC, 2011c) with NPS EN-1 (DESNZ, 2023a), NPS EN-3 (DESNZ, 2023b) and NPS EN-5 (DESNZ, 2023c), that came into force in 2024, relevant considerations in the decision-making process) unless (inter alia) the adverse impacts of a proposal would outweigh its benefits. The potential environmental impacts of the Proposed Development, including landscape and visual impacts and impacts on land use, have been

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		comprehensively assessed in the ES. Wherever practicable, likely adverse effects have been avoided or minimised through embedded environmental measures in the design of the Proposed Development, taking into account the findings of the ES, consultation with stakeholders and national and local policy requirements.
2.5.15	5. Terrestrial ecology and nature conservation 5.1 The Development Proposal has the potential to harm biodiversity both directly and indirectly. Direct effects include loss of land to new development, whereas indirect effects include increased water abstraction to serve the development resulting in harm to water quality and water levels; and increased traffic resulting in a decline in air quality, both of which can impact habitats and species some distance from the development area.	The direct and indirect effects described have been considered during the Environmental Impact Assessment (EIA) process and outlined in: • **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]**; • **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**; • **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**; and • **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**.
2.5.16	5.2 Overall, HDC supports the approach to cable routeing undertaken as it has sought to avoid locally and nationally designated sites and woodland wherever possible and to narrow the working width at important hedgerow crossings. Additionally, HDD techniques are proposed at several environmentally sensitive locations, including river crossings and under woodland to further reduce the ecological impacts. HDC advises that where trenches may be left open outside of working hours, ramps should be placed intermittently along the length of the trench, to allow trapped animals to escape with ease.	The Applicant welcomes HDC's support on the approach taken to the cable routeing. As stated in the **Outline Code of Construction Practice** **[PEPD-033]**, all excavations left open overnight will be provided with a means of escape should an animal enter (see paragraph 5.6.50) and this will be implemented through Requirements 12 and 22 in the **Draft Development Consent Order** **[APP-019]**.
2.5.17	Ecology surveys and assessments 5.3 Sufficient information has been provided to assess the effects of development on biodiversity, along with necessary ecological surveys together with any proposed prevention, mitigation, or compensation measures. Specific comments to note are set out below.	The Applicant has no further comments on this matter at this time.
2.5.18	Irreplaceable and Priority Habitat 5.4 It is the understanding of HDC that the Applicant will not be removing any irreplaceable habitat within the DCO Order Limits within the administrative area of Horsham District. For the pocket of ancient woodland south of the Oakendene Industrial Estate, HDD will occur, with the drill entry complying with Root Protection Area and at a 6 metres depth. This is the only irreplaceable habitat mapped within the Phase 1 report in this area. 5.5 According to the Phase 1 report, there is a species-rich and species-poor hedgerow (priority habitat) running along the north and west boundary of the Washington Recreation Ground, a very small woodland pocket in the field to the west, and scattered trees across London Rd/The Pike. According to section 22.9.100 in Chapter 22 Terrestrial ecology report, no species-rich and/or important hedgerows will be permanently lost, with all permanent losses being associated with the Oakendene substation (22.9.103). Temporary losses will be reinstated within 2 years, either via planting or hedgerow translocation. With regards to potential protected/priority species within these habitats, any relevant mitigation licences granted will be followed, and an Ecological Clerk of Works will be present during the works.	The Applicant will not be removing any irreplaceable habitat within the DCO Order Limits within the HDC administrative area. The Applicant invites HDC and its advisors to read **Appendix A Crossing Schedule** of the **Outline of Construction Practice** **[PEPD-033]**.and **Appendix B: Vegetation Retention Plan** of the **Outline Code of Construction Practice** **[PEPD-033]** secured via Required 22 within the **Draft Development Consent Order** **[PEPD-009]** The Applicant confirms that the Washington Recreation Ground will be crossed by trenchless crossing methodology and all reinstatement, other than at the landfall, joint bays, within temporary construction compounds and at the onshore substation will take place within two years of the losses occurring (secured via Commitment C-103 of the **Outline Code of Construction Practice** **[PEPD-033]** secured via Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**).

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2.5.19	Wintering birds 5.6 Due to the scale of the proposed development, the Applicant used a sampling approach when choosing wintering bird survey sites, focussing on areas that were mostly likely to support aggregations informed by desk study returns (particularly those nearby designated sites; para 2.1.2 of Appendix 23.3 Rampion 2 Winter Bird Report). This method is acceptable.	The Applicant welcomes Horsham District Council's acceptance of wintering bird survey sampling approach and has no further comments on this matter at this time.
2.5.20	The Mens 5.7 The DCO works fall within the 12km conservation zone defined around the Mens Special Area of Conservation (Mens SAC). It has been identified as being in use by Barbastelle bats, which are a qualifying feature of the Mens SAC (where minimisation of disturbance and maintenance of habitat connectivity is important). The site also lies within the Sussex North Water Supply Zone, in relation to which an existing adverse effect on the Arun Valley SAC, Special Protection Area and Ramsar site ('the Arun Valley sites') was identified by Natural England (NE) in 2021 due to water abstraction. Likely significant effects on the integrity of these habitats sites because of the development cannot therefore be excluded. In accordance with the Conservation of Habitats and Species Regulations 2017 (Habitats Regulations) an Appropriate Assessment (AA) is therefore required. 5.8 In relation to the Mens qualifying features, in addition to the wider importance of woodland and Ancient Woodland, individual trees, including 'veteran trees' are also important contributors to the bat biodiversity of the district. It should be recognised that it may sometimes be necessary to undertake work on or fell protected trees and/or remove hedges. Mitigation such as hedgerow enhancement has been proposed. This includes control of article light emissions to specifically relate to the need for it, to be informed by further bat surveys.	The proposed Order Limits overlap with The Mens Special Area of Conservation (SAC) 12km conservation zone by 6.3 hectares (ha). This overlap is within areas that are largely made up of access routes following existing tracks. Construction in this area would not require removal of hedgerows, trees or woodland. This limits potential effects on barbastelle bats. Further, any temporary lighting for the trenchless crossing at Sullington Hill (which would be outside of the 12km conservation zone, but within relatively close proximity) would be designed to be bat friendly in line with commitment C-105 of the **Commitments Register [APP-254]** and secured through the **Outline Code of Construction Practice [PEPD-033]** and Requirement 22 of the **Draft Development Consent Order [PEPD-009]**). Assessment of the Mens SAC is provided in **Section 22.9 of Chapter 22: Terrestrial ecology and nature conservation**, **Volume 2** of the ES **[APP-063] a**nd an appraisal of potential adverse effect on integrity is provided in Chapter 7 of the **Report to Inform Appropriate Assessment [APP-038]**.
2.5.21	Biodiversity Net Gain 5.9 The Development Proposal has sought to mitigate and enhance biodiversity through a range of measures, including a commitment to Biodiversity Net Gain and enhancements either on or off the site and provide buffer strips around protected sites, including Ancient woodland and other vulnerable habitats, and maintain, reinstate and enhance wildlife corridors. The location of areas with potential for enhancing biodiversity within Horsham 8 District is identified in the Council's Green Infrastructure Strategy and Wilder Horsham Strategy. 5.10 It is welcomed that the Applicant proposes to deliver a 10% BNG in West Sussex as part of the development (see C-104 on Commitments Register), despite not becoming mandatory for NSIPs until November 2025. It is also encouraged that where on-site BNG is not possible, off-site efforts are prioritised in locations that fall under the upcoming Local Nature Recovery Strategy (LNRS) and/or Biodiversity Opportunity Areas (para 5.3.6 of Appendix 22.15 Biodiversity Net Gain Information). Delivery of off-site habitat creations and enhancements before or during the early stages of construction is strongly supported (para 22.7.9 of Chapter 22 Terrestrial Ecology and Nature Conservation). 5.11 Nevertheless, a full assessment of the BNG plans cannot be made without the submission of a completed statutory biodiversity metric, a habitat management and	The Applicant has committed to deliver at least 10% biodiversity net gain (BNG) (see commitment C-104 of the **Commitments Register [APP-254]** updated at Deadline 1 submission) which has the potential to lead to real benefit in the local authority areas that are directly crossed by the onshore cable corridor and support the other onshore infrastructure. The Applicant welcomes Horsham District Council's proactiveness and the sharing of the Wilder Horsham Strategy. As noted, the Applicant will be seeking units within the host authority areas. Although the full details of losses and gains will come forward in the detailed design phase, the front loading of delivery will ensure positive works for biodiversity are occurring prior to habitat losses associated with the construction phase beginning. **Appendix 22:15: Biodiversity Net Gain Information, Volume 4** of the Environmental Statement (ES) **[APP-193]** and associated requirement (Requirement 14) of the **Draft Development Consent Order [PEPD-009]** ensures that the opportunity to contribute to local and strategic biodiversity improvements will be maximised. Requirement 14 of the **Draft DCO [PEPD-009]** secures the delivery of Biodiversity Net Gain (BNG) and **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** describes the mechanism by which it will be delivered including information on the timing of delivery (including front loading), the process for identifying biodiversity units (i.e. a hierarchy of criteria to identify the most suitable units available) and how these would be secured and managed (effectively as units purchased from strategic projects or via

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	monitoring plan in full (including details of off-site BNG sites; see C-199) and a map of proposed areas for BNG. However, it is understood that these documents will be submitted later when more information is acquired, and the overall project design is finalised. 5.12 As per para 4.2.7 of Appendix 22.15, given the nature of some of the habitats within the DCO Order Limits (namely coastal and flood plain grazing marsh, lowland mixed deciduous woodland and other rivers and streams), the Applicant proposes to satisfy the trading rules through enhancement of already existing habitats of the same type. This is because these habitats require specific physical elements and are therefore difficult to create. Furthermore, the Applicant will be replacing all 'temporary' loss of woodland with scrub, due to the need to protect transmission cables from root damage caused by large trees (para 3.1.7 of Appendix 22.15). Because of this, HDC strongly advises incorporating planting of woodland as part of BNG uplift off-site.	habitat banks (including potentially on land owned by affected parties). Without a detailed design and the opportunity to then fully quantify the losses, identify where these occur (including in which district) and identify what opportunities for provision are available at the time it is not possible to provide information on location, type etc. at present. This information would be provided and agreed as per Requirement 14 of the **Draft Development Consent Order [PEPD-009]**.
2.5.22	5.13 HDC also requests there is scope to enhance Cowfold Stream, as it is in bad ecological status according to DEFRAs catchment data explorer. This would benefit the potential local water vole population, with desk study records being identified within tributaries of the waterbody (see 22.5.74 of Chapter 22) and surveys recording signs of water vole near to the site (Figure 22.11.6 of Appendix 22.11 Badger, Otter, and Water Vole Survey Report). Furthermore, HDC recommends creation and/or enhancement of hedgerows in Henfield (particularly with blackthorn), a current hotspot for the brown hairstreak butterfly, a Sussex BAP. HDC would also encourage incorporating black poplar trees as part of the wet woodland habitat creation plans at the Cowfold substation, given this tree species is a Sussex BAP. 5.14 Where replacement planting is required, replanting with native species is proposed to ensure that ecological networks remain functional and to prevent the isolation of trees and woodland in the landscape. HDC requests that the proposed level of net gain is committed to by the Applicant and secured in the DCO, should the application be consented.	The Applicant will seek to identify opportunities for the delivery of habitat creation and enhancement measures in and around Henfield and the Cowfold Stream should these be available following the approach to locate and secure biodiversity net gain (see **Appendix 22.15: Biodiversity Net Gain Information, Volume 4 of the ES** [**APP-193**]). The Applicant is committed to delivering at least 10% biodiversity net gain as part of the Proposed Development as noted in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** and secured through Requirement 14 of the **Draft Development Consent Order** [**PEPD-009**].
2.5.23	The Oakendene Substation 5.15 In the case of the substation, it has been agreed with the applicant through the production of Principles of that biodiversity enhancements will be considered as part of the building design and layout (including proposals for Sustainable Drainage). Nonetheless, HDC further consideration of appropriate mitigation to minimise any harm is required, and HDC requests the applicant look further at enhancement measures to compensate for the residual impacts that had been identified in the ES. 5.16 According to Figure 22.8.23b of Appendix 22.8 (Passive and active bat activity report), there was a total of 3,621 bat passes along hedgerows H511 and H512 (transect AT10) located at the Cowfold substation site, which are to be permanently lost. Furthermore, a single juvenile hazel dormouse was recorded in October 2022 along this hedgerow network (para 22.5.64 of Chapter 22), and grass snake and slow worm were identified in low numbers within the proposed substation site (para 22.5.69 of Chapter 22). Edna surveys for great crested newt returned positive results in ponds nearby to the substation site (Figure 22.7.6m of Appendix 22.7 Great Crested Newt Environmental DNA Survey	The views of Horsham District Council (HDC) are noted by the Applicant and updates to the **Outline Landscape and Ecology Management Plan [APP-232]** will come forward at Deadline 3 of the Examination. This will include further information on management and monitoring, advanced planting and amendments to the indicative landscape plan. It will also include reference to the provision of nest boxes for dormouse as requested. These measures will be secured through Requirement 12 of the **Draft Development Consent Order [PEPD-009]**. It is acknowledged that wet woodland is sub-optimal habitat for dormouse as they cannot hibernate in the area. However, wet woodland provides feeding and commuting opportunities. The wet woodland shown on the Indicative Landscape Plan (Figure 1 of the **Outline Landscape and Ecology Management Plan [APP-232]**) lies within the detention basins that form part of the drainage design and the opportunity has been taken to use these to create a wooded habitat, as opposed to grassed basin. This has been done as it provides additional screening of the onshore substation, connectivity for bats and dormice and provides habitat for nightingale (especially around woodland edges or the scrubby interior), great crested newt and grass snake.

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	Report 2021-2023), and breeding bird surveys identified multiple nightingale territories on site (para 3.4.1 of Appendix 22.13 Breeding Bird Survey). 5.17 Therefore, many protected and notable species utilise this hedgerow, acting as a wildlife corridor to other suitable habitats. To mitigate against the potential for roosting bats in the trees within the hedgerow, the Applicant will conduct pre-construction surveys of trees with bat roost potential that require removal or pruning (C-211 on commitment register). Should roosts be identified, suitable mitigation will be delivered in accordance with an EPSL from NE and works supervised by an Ecological Clerk of Works. Likewise for hazel dormouse (C-232), reptiles (C-208), and great crested newt (C-214), preconstruction checks will be carried out and an EPSL sought where necessary. As part of commitment C-232, enhancement opportunities to improve habitat connectivity will be sought through C-103, C-104, C193, C-196 and C-199. 5.18 The proposed landscape plan (Figure 1 of Rampion 2 Outline Landscape and Ecological Management Statement) includes retention of existing hedgerows along Kent Road, the A272, and the southern boundary of the site. It also includes planting of new scrub, woodland/wet woodland and scattered trees around the periphery of the substation, which are all suitable habitat for nightingale. 0.56ha of woodland/scrub is also due to be planted adjacent to the strip of scrub where the hazel dormouse was recorded, before construction of the substation commences (22.9.158 of Chapter 22). This will provide foraging opportunities in the short-term, and nesting opportunities as the habitat establishes. 5.19 Therefore, the commitment to retain connectivity of the site with surrounding habitats and mitigate impacts on protected species is adequate. However, wet woodland is suboptimal habitat for hazel dormouse, and HDC would therefore suggest an increase in native scrub planting along the western boundary of the site, where current gaps between retained vegetation and native scrub planting currently exist. Additionally, due to the initial reduction in dispersal habitat for hazel dormouse (22.9.160 of Chapter 22), HDC advises consideration of further mitigation measures such as installing dormouse nest boxes within suitable habitat, to assist the populations' persistence during the construction phase. 5.20 Further to the above, assumed permanent lighting is restricted to the onshore substation (Table 22-19 of Chapter 22). Therefore, a lighting scheme will need to be submitted, as per commitment C-105, that complies with BCT Artificial Lighting Guidance Note and illustrates wildlife sympathetic lighting on the substation site. Moreover, during the management of onsite habitats, HDC discourages the use of chemical spot treatment of weeds (para 4.3.3 of Rampion 2 Outline Landscape and Ecological Management Statement) near to areas of wet woodland / SuDS, to avoid contamination of the water sources.	Operational lighting at the onshore substation is described in paragraph 4.8.27 of **Chapter 4: The Proposed Development, Volume 2** of the Environmental Statement (ES) **[APP-045]**: '*Lighting during onshore operation and maintenance activities is expected to be minimal. External lighting will be directional and limited to essential security and safety requirements. External works will usually be scheduled during daylight hours. If night working is required, then portable directional task lighting will be deployed*.' This description alongside the implementation of commitment C-105 of the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) will ensure effects of lighting on biodiversity at the onshore substation are minimised. The control of artificial lighting during the operation and maintenance phase is secured in Requirement 30 of the **Draft Development Consent Order** **[PEPD-009]**.
2.5.24	Water Neutrality and the Arun Valley sites 5.21 In the case of Arun Valley sites, designation relates to birds, invertebrates and to aspects of the underlying wetland habitat. Increased demands for water would be at odds with these objectives. Proposals must demonstrate that they will avoid harm to the water	The Applicant presents a dedicated commitment in relation to water neutrality (C-260 of the **Commitments Register** **[APP-254]** updated at Deadline 1 and paragraphs 26.7.10 to 26.7.12) within Section 26.7 of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**.

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	quality and water levels on the site, and Natural England advises that one way of doing so is to demonstrate water neutrality. 5.22 Although, water usage at the substation welfare facilities (including toilet, wash hand basin and additional sink) and a fire control (sprinkler) system) would be sporadic (the substation is not a permanently staffed facility, with people present for routine maintenance and repairs only) to achieve water neutrality mitigation would still be necessary. 5.23 The appellant has proposed efficient fittings and a centralised system of grey water recycling for the proposed development. Affected authorities are currently working towards the delivery of a strategic scheme whereby developers can contribute financially to an offsetting scheme that will deliver the necessary water use reductions across the area to enable developments to achieve water neutrality. Assuming this strategic scheme is available at the time of commissioning, the Applicant would provide the required financial contribution to the scheme to enable the water usage at the substation to be fully mitigated. If the strategic scheme is not available at the time, then a range of bespoke measures would be put in place. This would include the reduction of potential water use on-site at the substation (as per commitment C-260) via water harvesting and recycling and other measures (such as alternative supply of water via tanker). Currently the strategic scheme is being formulated but is expected to be in operation well before the substation would be commissioned. 5.24 There is no strategic solution currently in place. The scale of the financial contribution cannot yet be estimated as there is neither a detailed design for the substation (which is reliant on a large range of factors including number, type and output of individual wind turbines, number of transmission cables etc.) allowing for an estimate of water usage. Shifting the burden of proof to some point in the future neither does nor would satisfy the need for certainty at the point of undertaking an AA. Given that uncertainty remains, and use of a condition could not resolve the matter, HDC cannot conclude that likely significant effects on the integrity of the Arun sites would be mitigated. 5.25 In this instance, the nature of the proposed development would result in an increased consumption of water that would result in a significant impact on the Arun Valley sites, either alone or in combination with other plans and projects.	These commitments are secured by Requirement 8 (2) in the **Draft Development Consent Order** **[PEPD-009]** so that further work can be progressed once the detailed design of the onshore substation has been developed. This requires that the details to be submitted with respect to the onshore substation (which must be approved prior to the commencement of works there) include water harvesting and recycling measures, or any other measures necessary to ensure water neutrality. Water used during the operation and maintenance phase will be limited and could be secured through any of the potential mitigation routes described in **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**. The quantification (based on a worst case) of water usage, alongside details of possible routes to mitigation will provide the type of information that proved satisfactory for the Planning Inspectors to settle discussions of water neutrality in the recent Storrington appeal APP/Z3825/W/22/3308455 (The Planning Inspectorate, 2023). A 'strategic scheme' (endorsed by Natural England) Is currently in development (with a dedicated HDC local authority delegate), to help improve the efficiency of appliances/devices elsewhere in the Sussex North water supply zone and to help reduce regional water use. The idea behind a strategic scheme is to enable developers to purchase credits to offset any water consumed at the Proposed Development. As noted in paragraphs 26.7.10, in the unlikely event of the strategic scheme not being available on time then other options could include a private scheme and / or not drawing water from a mains source (through off site water imports / exports sourced from outside the Sussex North Water Supply Zone). A firm commitment has been secured towards neutrality, with flexibility as to the exact means by which this will be achieved and this is secured via Requirement 8 (2) of the **Draft Development Consent Order** **[PEPD 009]**. It is noted by the Applicant that in a recent appeal decision Horsham District Council (HDC) confirmed that its own led strategic offsetting scheme should be operational in 2024 and the Mitigation Strategy prepared for the West Sussex Water Resource Zone (Crawley Borough Council et al., 2022) states that offsetting capacity delivered by the Southern Water demand reduction programme is likely to be available to contribute to water neutrality in new development proposals in 2025. Whilst the Mitigation Strategy will have to prioritise sites participating in the scheme, the Proposed Development will provide much needed renewable energy (which has been identified as a critical national priority in the recently designated National Policy Statement (NPSs) (Department for Energy Security and Net Zero, 2023a; 2023b and 2023c)); the amount of water required to be offset by the Proposed Development will be small; and by the time the onshore substation is developed, the schemes will have been established for some time allowing for additional offsetting capacity to be established. Paragraph 2.41 within the **Report to Inform Appropriate Assessment (RIAA)** **[APP-038]** concludes that there is *'no potential for an AEoI to the conservation objectives on the features of the Arun Valley Ramsar site due to over abstraction of water from the Proposed Development alone and therefore, subject to natural change, the features will be maintained in the long term'.* In terms of construction water usage, water for construction usage will not be taken from the mains and it will instead be tankered to main compounds (for their welfare facilities

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		systems, and wheel washing) and Trenchless Crossing (TC) compounds (for use of as drilling fluids), for wheel washing, potentially dust suppression, and welfare facilities. On this basis, construction use was not considered and effectively screened out of the **Report to Inform Appropriate Assessment (RIAA)** **[APP-038]**.
2.5.25	6. Landscape and Visual Impact Assessment 6.1 The scope of a Landscape Visual Impact Assessment (LVIA) does not include visiting or assessing individual private views. The documents identify the impacts to users of Public Right of Way 1786 (and also 1788), which is as required as part of the LVIA. These and other viewpoints around the proposed substation are also accompanied by a visualizations, see (part 2 of 6), viewpoints SA2 (fig 18.11a-e); viewpoint SA3a (fig 18.12a-e); SA3b (fig 18.12f-j); viewpoint SA7a (Fig 18.13a-c); viewpoint SA7b (fig 18.13d-h; viewpoint SA8 (fig 18.14). Notwithstanding, HDC considers that generally the network of public rights of way in this area is not extensive and the fact that adverse harm has been identified on these receptors, this would be unlikely a strong enough reason to reject the location, particularly when receptors already experience some urban influence and walk through the Oakendene Industrial estate.	6.1 - The Applicant agrees and has no further comments on this matter at this time.
2.5.26	6.2 The proposals would have an adverse impact on the landscape character and visual resources of the Low Weald National Character Area; and direct and indirect effects on the National Park designated landscape. In turn, this would change the character of the 11 landscape of Local Character Areas (five plus those where theoretically will have a visibility during construction). HDC agrees with the landscape character area receptors identified. 6.3 The Applicant has sought to mitigate this harm by use of engineering measures along the routeing of the underground cabling, to avoid significant residual visual impacts. The DCO submission sets out in principle how removed hedgerows will be effectively restored and replanted. This is a key approach to mitigation to be implemented correctly, as the entire Landscape Visual Impact Assessment is based on the success of these measures.	6.2 - The Applicant agrees that the Proposed Development would have an adverse effect on the landscape character and visual resources of the Low Weald National Character Area and direct and indirect effects on the South Downs National Park (SDNP). It is not agreed however that that this would in turn change the character of the 11 landscapes of Local Character Areas (LCA) (five plus those where theoretically will have a visibility during construction). **Chapter 18: Landscape and visual impact assessment, Volume 2** of the ES **[APP-059]** identifies that part of six LCAs north of the SDNP and within the Low Weald National Character Area would be significantly affected by the Proposed Development. This includes D1: Amberley to Steyning Farmlands; F1: Pulborough, Chiltington & Thakeham Farmlands; G1: Ashurst & Wiston Wooded Farmlands; O3: Steyning & Henfield Brooks; and J3: Cowfold & Shermanbury Farmlands; and LW1: Hickstead Low Weald. A further four LCAs would be significantly affected within the SDNP including R1: South Downs Upper Coastal Plain; B4: Angmering and Clapham Wooded Estate Downland; A3: Arun to Adur Open Downs; and J3: Arun to Adur Scarp Footslopes. 6.3 - The Applicant has no further comments on this matter at this time.
2.5.27	6.4 Embedded environmental measures (table 18-25) re C-115, which proposes that reinstated hedgerows and tree lines will be monitored over a period of 10 years and remedial action swiftly taken, and this is followed through into the Landscape Environmental Management Plan (LEMP) but no guidance on procedure is yet provided. Para 2.6.11 (of the LEMP) says this is to be submitted with the maintenance works but not clear at what stage this is to be submitted. It is unclear if this means with a LEMP for each phase. Triggers need to be clear to what is considered completion and when the 10 years is started (is it for full construction period or partial completion at each phase) and equally for the 10 years post planting (is it from practical completion or partial completion of each phase).	All landscaping (including reinstated vegetation such as hedgerows and trees and new landscape planting as part of the mitigation (including the Indicative Landscape Plans at Oakendene and Bolney) will be maintained and monitored for 10 Years. This is set out in the **Design and Access Statement (DAS)** **[AS-003]** and the **Outline Landscape and Ecology Management Plan (LEMP)** **[APP-232]** secured by requirements 8 and 12 of the **Draft Development Consent Order** **[PEPD-009]**. Requirement 12 of the **Draft Development Consent Order** **[PEPD-009]** is required for each stage of the Proposed Development prior to its commencement. A programme of works defining the phases is required to be submitted pursuant to Requirement 10 of the **Draft Development Consent Order** **[PEPD-009]**. Following Issue Specific Hearing 1 in February 2024, the Applicant is considering adding further clarifications on the detail of the monitoring and maintenance and remedial action plan for a future deadline.

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		The Applicant notes that the commencement of the 10 year aftercare requirement is after the planting for that stage has been completed. This is stated in the **Draft Development Consent Order [PEPD-009]** requirement 13, under paragraph (1) which states "*All landscape works must be carried out in accordance with the landscape and ecology management plan for the relevant stage approved under requirement 12*" and paragraph (2) which states, "*Any tree or shrub planted as part of an approved landscape and ecology management plan that, within a period of ten years after planting, is removed [etc…]*". The Outline LEMP advises (paragraph 2.6.3) "*stage specific LEMP will include detailed 'contract ready' Landscape Plans, suitable for implementation of the works*" and (paragraph 2.6.4-5) "*A programme of landscape works will be provided setting out the programme according to relevant planting seasons and maximising opportunities for advance planting prior to construction to allow trees to mature during the construction works and in advance of completion of the onshore substation. Some of the landscaping will be established prior to the beginning of construction (advance planting), with the remainder being delivered following the completion of the substation and the decommissioning of temporary construction compounds*." In respect of other habitat creation / landscaping works along the route of the cable corridor the **Outline LEMP [APP-232]** (paragraph 5.1.2) advises "*All habitats created and reinstated will be monitored and managed for a period of no less than ten years. Where habitats are to count towards the commitment for BNG this period will be no less than 30 years (Department for Environment, Food and Rural Affairs (Defra), 2022). Each stage specific LEMP will provide this information in a monitoring and management schedule*." It intended that the programme of landscape works would be provided as part of the first stage specific LEMP and reviewed / updated annually as the works progressed. In this manner the programme would cover advance planting completed at the beginning of the construction phase (maintained for 10 Years) as well as planting completed at the end of the 3.5 to 4 year construction phase, also (maintained for 10 Years). The Applicant will continue to engage with HDC on these points and is considering wording to make this clearer in the **Outline LEMP [APP-232]** and the **Draft Development Consent Order [PEPD-009]** and will update the Order as necessary at Deadline 3.
2.5.28	6.5 In terms of construction phase, the temporary works compounds at Washington would be visible from and would sit within views to the South Downs National Park. Impact on a National Park is afforded the highest levels of protection and includes an express requirement to consider impact on its setting. Concern is raised over the impact arising the outlook from the South Downs National Park, particularly given the elevated viewpoints within the Park. During construction stage, due to construction compounds, there are also likely significant effects to users of the Washington recreation ground. These have not been identified as likely significant effects but will need to be considered as part of the receptors accessed. Additionally, at table 18-23 Onshore cable corridor –visual receptors within 2km (south north) Part SDNP (page 119 of the LVIA), Washington is included within settlements receptors and reference is made to recreation ground, allotments, and village green.	Views of the temporary Washington construction compound from the South Downs National Park (SDNP) are provided in Viewpoint NP5: PRoW 2282, east of Sullington Hill (**Figure 18.73, Volume 3** of the ES **[APP 103]**), Viewpoint I: Chanctonbury Ring (**Figure 18.49, Volume 3** of the ES **[APP 102]**) and Viewpoint N: Devils Dyke (**Figure 18.58, Volume 3** of the ES **[APP 102]**). An assessment of these views and visual effects is provided in **Appendix 18.2: Viewpoint Analysis, Volume 4** of the ES **[APP-168],** **Appendix 18.4: Visual Assessment, Volume 4** of the ES **[APP-169]** and **Appendix 18.3: Landscape Assessment**, **Volume 4** of the ES **[APP-170]**. The magnitude of change affecting these views will be Negligible to Zero with most views screened by landform and / or vegetation and the level of effect Minor to None and Not Significant. In undertaking the assessment of Washington, many different streets and public open spaces (such as recreation ground / village greens and allotments and where appropriate)

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	However, this into then followed during the visual assessment (appendix 18.4) and needs to be addressed.	are included within the settlement, and all are afforded high sensitivity as representative of the view as likely to be experienced by groups of residents. The relevant assessment is set out in **Appendix 18.2: Viewpoint Analysis, Volume 4** of the ES **[APP-168],** **Appendix 18.4: Visual Assessment, Volume 4** of the ES **[APP-169]**. Washington has very limited views of the Proposed Development as indicated by the limited zone of theoretical visibility (ZTV) coverage of the settlement and the trenchless crossing of the playing fields, located just to the north of the village (settlement boundary). Consequently, views from the settlement would not be significant. This also applies to the allotments, located further to the north of the recreation ground at Washington, which would be screened by perimeter hedges and vegetation / buildings associated with Washington Caravan Park The assessment does however acknowledge that there would be significant views of the Washington construction compound from Viewpoint H1 along the A283 on the northeastern edge of Washington (**Figure 18.32 Volume 3** of the ES **[APP 100]**). The Applicant will continue to engage with HDC on these points.
	6.6 Furthermore, Washington Recreation ground effects are assessed within the settlement receptor rather than a receptor on its own right (Appendix 18.4: Visual assessment, Volume 4 of the ES (Document Reference: 6.4.18.4); Page 39 – Table 1-7 visual effects of onshore cable corridor on settlements: Washington). This is considered acceptable to simplify the complexity of the LVIA but HDC disagree that the level of effect is considered minor and not significant, mostly justified by the fact that the cabling is underground and view H1 (acknowledges the compound as significantly visible) is not considered as being representative of views from the settlement. Whilst this may be the case from the settlement overall, it is considered that users of the recreation ground, are not being given a proportionate assessment and in this case, it may perhaps make more sense to include it as a receptor within recreational and tourist destination receptor group. No assessment of the allotments and village green as previously indicated at table 18-23.	Please refer to the Applicant's response in **reference 2.5.28** above. Viewpoints H and H1 illustrate 'worst case' views from the edge of the settlement and along the A283 near Washington. It is considered that a 'representative view' from the settlement illustrating the non-significant visual effects (which HDC acknowledge this will be the case from the settlement overall) would further aid this assessment. The Applicant welcomes HDCs Representation and it is agreed that significant effects assessed for the recreation ground / playing fields on the northern edge of Washington will be presented as a recreational receptor within **Appendix 18.4: Visual Assessment, Volume 4** of the ES **[APP-169]** and added to summary Table 18.45 of **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**.
2.5.29	6.7 In terms of the operational phase, the overriding issue is the substation at Cowfold; and whether all reasonable endeavours had been made to minimise the scale, both through the parameters of the building itself and through its siting, and whether adequate provisions were being made to secure mitigation. The proposals would impose the substation site as a permanent feature in the landscape, notably by way of the scale of the proposed substation, and its indicative design, and supporting industrial features 12 such as fencing, CCTV cameras, and tracks, and on visual receptors, including the nearby Public Right of Way network. The Applicant has sought to mitigate this harm by boundary planting that would of benefit in filtering the development once established.	Please refer to the Applicant's response in **reference 2.5.6** above.
2.5.30	6.8 The Applicant has identified likely Significant effects have been identified on landscape effects to the Oakendene substation. This identifies significant effects on the Local Character Area during construction, operation and maintenance and decommissioning phase. This is agreed with. In addition, it is considered that the substation will have a significant effect on some of the onsite existing landscape features (such as the removal of the internal tree and hedgerow boundary). Likely Significant effects have also been identified on visual effects to the Oakendene substation. Significant effects are identified on receptors (prow 1786 and 1788 and road users on A272 and Kent Street) during	6.8 - It is agreed that significant effects would affect public right of way (PRoW) 1787, included previously as part of PRoW 1786 in the assessment (to be included in the Errata Tracker at a future deadline). The Applicant has met with HDC to discuss this matter and it has been agreed that commitment C-68 (**Commitments Register** **[APP-254]** within the **Design and Access Statement (DAS)** **[AS-003]** secured via Requirement 8 within the **Draft Development Consent Order** **[PEPD-009]**) will be updated at a future deadline to take specific account of

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	construction. These are likely to reduce to some degree once mitigation measures mature during operation stage but there will still be significant residual effects to users of prow 1786. HDC also consider that significant effects will be experienced by users along 1787. Commitment C-68 on the substation design and material/finishes should take account of WSCC land management guidelines and given the substation is within Horsham District, the proposals should also take account of local character areas guidance's and characteristics within the J3 Cowfold and Shermanbury Farmlands, of the Horsham District Character assessment. 6.9 Landscape elements and recreational destinations are identified as receptors (in the scope of the assessment) but not assessed as likely to result in significant effects during construction, operational and decommissioning stage. HDC has concerns the effects on landscape elements are understated, as the loss of the internal boundary hedgerows and trees, as landscape features, to facilitate the new proposed Oakendene station for example, are significant. It is positive however to see that these have been identified as receptors, even if the conclusions are disagreed at this stage. Additionally, in the baseline conditions for the onshore substation at Oakendene – landscape receptors, the site's landscape features are not identified. Only the character areas are discussed. The site's landscape features need to be part of the assessment as they are also identified (as receptors in the scope of the assessment). The LVIA confirms that the operational stage of the proposals at Oakendene substation (completed development) and concludes that there are significant landscape effects to the host landscape character area (J3: Cowfold and Shermanbury Farmlands). This is also the case for the landscape character of the site itself and immediate setting, particularly to the south and southwest. The loss of the landscape features (internal boundary hedgerows and trees), recognised in the LVIA as contributing to the landscape character, is considered of high magnitude. HDC concurs with this.	West Sussex County Council (WSCC) land management guidelines (*A Strategy for the West Sussex Landscape*, October 2005, page 32 - County Wide Landscape Guidelines) and the *Horsham District Landscape Character Assessment*, 2003, pages 111-113. Commitment C-68 already refers to the WSCC land management guidelines and both of these documents are referenced in Table 18-16 of **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059].** 6.9 – In respect of landscape elements please refer to the Applicant's response in **reference 2.5.6** above. The Applicant does not accept that these have been understated. In respect of recreational receptors please refer to the Applicant's response in **reference 2.5.28** above. The Applicant has no further comments on this matter at this time.
2.5.31	6.10 To note, in Appendix 18.3 Landscape assessment, volume 4 of the ES (Doc Refence 6.4.18.3) tables refer to visual receptors but it is assumed this is a typing error and mean landscape receptors. In here, the land landscapes elements are assessed separately but this does not seem to follow onto the overall conclusions of the core document.	The Applicant will include this amendment (change table heading from 'Visual receptor' to 'Landscape receptor') to Table 2-1 of **Appendix 18.3: Landscape Assessment**, Volume 4 of the ES **[APP-170]** and Table 18-40 and 18-44 of **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** in the Errata Tracker at a future Deadline). Landscape elements are also summarised and listed out on paragraph 18.9.20 and page 229 of **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**.
2.5.32	6.11 As previously highlighted, how removed hedgerows will be effectively restored and replanted is a key approach to mitigation to be implemented correctly, as the entire Landscape Visual Impact Assessment is based on the success of these measures. Whilst the Outline LEMP sets out an acceptable strategy, HDC would encourage commitment to the delivery of advanced planting where possible and existing hedgerow management arrangements actioned from the outset, with details submitted prior to commencement on site. The Landscape Management section of the LEMP refers to monitoring proformas to be made available to HDC and any adaptive measures to be discussed and agreed prior to implementation, but no details to how this will be triggered and secured. At para 4.5.4 it is suggested that reinstatement plans will not be produced for all areas of landscape. However, my interpretation of the stage specific LEMP (para 2.6) would be that this is for all areas works, which must include proposed, and reinstatement works. Otherwise, it raises query to how would the reinstatement be monitored. The submission of planting	Please refer to the Applicant's response in **references 2.5.6** and **2.5.27** above. The Applicant will amend the **Outline Landscape and Ecology Management Plan (LEMP) [APP-232]** at Deadline 3 to ensure that it is clear that a plan and programme of all landscape / habitat creation works is maintained, the reference in paragraph 4.5.4 amended to refer to a detailed plan for sensitive areas if required. 'Planting plans' are referred to in the **Outline LEMP [APP-232]** as 'Landscape Plans'.

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	plans are not referred to within the LEMP although this is suggested within the DAS that would form part of this report. No reference to planting plans within the DCO either. 6.12 The issue with part-completion dates has been identified throughout documents as each phase will have a different construction completion date. This will make monitoring of the various aspects of maintenance of proposed landscape difficult to kept track of and difficult to establish the end of the 10 year period referred to as part of the maintenance and monitoring period. A clear programme as to how this is to be addressed needs to be secured.	
2.5.33	6.13 Whilst it is agreed that in time the proposed mitigation will reduce the identified visual adverse effects, this will not be the same during construction and pre planting areas should be explored. The pre-planting of landscaping works is referred to within the DCO under 'onshore site preparation works' (page 8, under the interpretation section), and also within the LVIA as mitigation measures, however the locations where this would be feasible doesn't seem to be identified anywhere yet. HDC also cannot see this identified as a commitment within the register. In the draft Development Consent Order, preplanting is discussed as being part of the 'on-shore site preparation works' (Part 1 Preliminary, Page 8, under the interpretation section). However, there is no reference to this as a commitment or to which geographical area this would be implemented. This is important to help mitigate temporary effects during construction but also where possible, it will offer advanced screening prior to operation stage. One example will be to action the management and maintenance of the hedgerow along the A272 to soften views of the temporary compound, but also introduce any enhancement planting along this boundary and Kent Road. Additionally, Part 3 Requirements, provision of landscaping requires works no. 16 (onshore project substation and associated construction works) not to be delivered without being accompanied by the relevant part of works 17 (environmental mitigation). However, it is unclear if the detail of each works type will be subject to detailed design secured within the DCO under the various commitments/ requirements. The wording in Part 3 13 (2)" requires clarification – is removal or damage (Such as vandalism) by a third party covered by this clause. It is also unclear when the 10-year trigger starts in reference to 'within a period of 10 years after planting'. Is it post completion for the overall scheme or are these targeted, based on part completion certificates for each phase and therefore different completion dates.	Please refer to the Applicant's responses in **references 2.5.6** and **2.5.27** above. The Applicant will continue to engage with HDC on these points, including **Draft Development Consent Order [PEPD-009]** Part 3 Requirement 13 (2) in respect of vandalism / third party action.
2.5.34	6.14 With regard to the Design and Access Statement (DAS), the principles identified to maintain the rural landscape character are agreed with but these principles do not take into consideration the adverse effects of the construction period and therefore any identified adverse effects during the construction will remain and temporarily will not 'maintain the rural character' and adverse effects are experienced. For example views and experience of rural character from the A272, Figure 18.11b, Figure 18.13b (doc ref 6.3.18, Vol 3, Chapter 18 LVIA figures (Part 2 of 6)). Notwithstanding, it is recognised that views from several receptors, such as near the lake to the south of Oakendene Manor and part of ProW 1786, will be adversely affected by experiencing some loss of rural character and views across the parkland landscape at Oakendene Manor.	6-14 – The **Design and Access Statement [AS-003]** secured via Requirement 8 within the **Draft Development Consent Order [PEPD-009]** includes principles to retain and protect existing vegetation and manage hedgerows where possible to increase screening along the A272. The **Outline Landscape and Ecology Management Plan [APP-232]** seeks to maximise opportunities for advance planting prior to construction, although this will provide limited screening during the construction phase. Whilst some visual effects during the construction phase will be unavoidable these measures will make a noticeable contribution to the screening of construction effects and are secured through requirement 12 of the **Draft DCO [PEPD-009]** on a staged basis.

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	6.15 The DAS proposes that amongst others, amongst others, planting plans and specifications are to be included within the LEMP, and HDC is supportive of this approach. The DAS also directs the reader to plans where it is shown areas of vegetation to be removed and retained. This can be found at Outline Code of Construction Practice (CoCP) Appendix B – Vegetation Retention Plan (Document Reference: 7.2). Within the 14 context of Oakendean Manor/substation, one section of woodland clearance (20m) is proposed within our district, see Fig 7.2.2h (vegetation retention plans). Also as identified and discussed previously, the development will require the removal of the internal field's boundary of hedgerow and trees, which will have an adverse effect on the landscape character and visual amenity. These are historic field boundaries shown on old OS Maps 1888 and will result in the loss of key characteristics of the character area. However, mitigation, is proposed and described within the LVIA through additional planting.	The Applicant will continue to engage with HDC and seek clarification on these points. 6-15 – Noted, the Applicant has no further comments on this matter at this time.
2.5.35	Trees and Hedgerows 6.16 The submitted Arboricultural Impact Assessment appears to be fair assessment of the quality, and condition of tree along the route and the potential impact of the proposed development on trees, woodlands, and hedgerows.	The Applicant has no further comments on this matter at this time.
2.5.36	- Tree survey method 6.17 The trees have been surveyed using the BS5837 Trees in relation to design demolition and construction Recommendations (2012) survey methodology. They have been allocated a category reflecting their condition and estimated remaining lifespan. 6.18 The tree survey covered approximately 96% of the proposed DCO order route. The trees within the remaining 4% of the area were not surveyed due to limited access. As such, they were recorded as groups of trees or woodlands depending on the geometry of each feature using aerial images of the surveyed area. Para 4.4.2 of the AIA. 6.19 Para 5.1.2 of the AIA refers to the number of trees, woodlands and hedgerows inside or within influencing distance of the DCO Order limits. Para 5.1.2 states that 974 individual trees, 792 groups of trees, 41 woodlands and 224 hedges were recorded as part of the survey. However, these numbers do differ from the number of trees recorded in ANNEX 4 Arboricultural Survey Data Sheets, where the number of individual trees surveyed is listed as 1482, the number of groups is listed as 1152, the number of Woodlands recorded is listed as 66, and the number of hedgerows surveyed is listed as 349. HDC does not have any significant concerns with how the survey data has been recorded or the classifications allocated to the trees. 6.20 Para 3.2.11 refers to how the recorded hedgerows were assessed using basic observations on species, form and dimensions, and the effects on hedgerows regarding retention, removal and management. The interpretation of these effects regarding landscape, visual significance and habitats forms part of the ES Chapter 22:Terrestrial ecology and nature conservation, Volume 2 (Document Reference: 6.2.22).	The reason for the apparent discrepancy in number of features (trees, groups, woodlands and hedgerows) in the main AIA text presented in **Appendix 16: Arboricultural Impact Assessment, Volume 4** of the Environmental Statement (ES) **[APP-194]** and ANNEX 4 is due to an original survey extent that was later refined based on the proposed DCO Order Limits. This is explained in paragraph 4.1.4 of the AIA which states, "*The initial survey was based on the Preliminary Environmental Information Report (PEIR) Assessment Boundary (RED, 2021). Following refinement of the PEIR Assessment Boundary during the project design process, trees falling outside the final proposed Order Limits have been removed from the data to ensure clarity of the final drawings. To ensure continuity, original feature references have been preserved but do not now always run sequentially. This is why some numbers in the tree survey data at Appendix A appear to be missing.*" The Applicant has no further comments on any other matters at this time.

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	6.21 The way Root Protection Areas (RPA) of the surveyed trees have been calculated is in accordance with BS 5837. Para 4.7.2 of the AIA states that due to a lack of detailed topographical information, the RPAs of the trees have been adjusted to reflect site conditions that might have influenced the rooting pattern of trees. 6.22 Para 4.6.2 & 4.6.3 of BS 5837 states, "The RPA for each tree should initially be plotted as a circle centred on the base of the stem. Where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced. 6.23 Para 4.6.3 of the BS states "Any deviation in the RPA from the original circular plot should take account of the following factors whilst still providing adequate protection for the root system" To compensate for the lack of topographical information, Para 4.7.2 of the AIA suggests that the RPA of any groups and woodlands has been applied as an offset from 15 the canopy edge depending on tree quality (and the individual attributes of the feature (i.e. age and average stem size). 6.24 Para 4.7.3 of the AIA states that where there is a concern with how the RPAs have been plotted in a specific location, they can be refined at the detailed design stage when more detailed topographical information is available; this would appear reasonable given the lack of any area-specific topographical data.	
2.5.37	- Statutory Controls and Non-statutory controls 6.25 In section 3.2, the AIA refers to Statutory Controls and Non-statutory controls and designations, such as Tree Preservation Orders (TPOs), Felling licences, regulations concerning Countryside hedgerows, Ancient Woodland, Veteran trees, and Habitats of Principal Importance such as Traditional Orchards.	The Applicant has no further comments on this matter at this time.
2.5.38	- TPO impact 6.27 Within Horsham District, only one TPO appears to be recorded within the DCO limits: TPO/1296 - W1 - Conifer plantation Land West of Wiston Cricket Club Steyning Road Wiston West Sussex. This woodland is recorded as W39 in the AIA. The Proposed DCO Order Limits are shown to abut the north-western corner of the woods but not within it, and from the AIA, it would suggest that no trees within the TPO area are indicated for removal.	The Applicant agrees with this statement and can confirm no trees within the TPO area are indicated for removal.
2.5.39	- Impacts on hedges. 6.28 Para 7.9.1 of the AIA states that, in total, 58 hedges will be affected by the cable route, with sections of the hedges in question being removed. The total length of the hedgerows to be removed across the whole development is 1,440m, and only 5 of these sections would not be able to be replaced post-development at the same location. In the proposed Oakendene substation area, 646m would be permanently removed, and this loss would be compensated for elsewhere through the enhancement of existing hedgerows or the creation of new hedgerows in the local area.	Please note that these loss estimates are taken from **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]** which records hedgerows, scrub and woodland in a different way to that described in **Appendix 22.3: Extended Phase 1 habitat survey report, Volume 4 of the ES [APP-181]** and **Appendix 22.5, Hedgerow survey report, Volume 4** of the ES **[APP-183]** as per the different survey methodologies. The assessment of hedgerow loss provided in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]** is based on the extended Phase 1 habitat survey and hedgerow survey. Following the Issue Specific Hearing Action Point 24 has requested that the Applicant reviews habitat losses and ensures consistency between documents. This work will be undertaken and the results provided at a future deadline.

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2.5.40	- Ancient Woodland impact 6.29 Para 3.3.6 of the AIA provides details of ancient woodland identified inside or within 100m of the proposed DCO Order Limits. This has been undertaken by way of desktop searches. They have recorded 21 designated Ancient Woodland (AW) areas in the Horsham district within 100m of the DCO Order limits. Para 7.8.2, 7.8.3 and 7.8.4 of the AIA refer to how the development would be implemented so that there would be no loss of AW arising from development. 6.30 Where areas of AW are encountered, the AIA suggests that the onshore cable installation in such locations will be undertaken using trenchless methods to reduce the risk of damage to the AW, and it proposed that any tunnelling beneath AW will be maintained at a depth of at least 6m to avoid root damage and disturbance; this is positive to see. Additionally, Para 7.8.4 of the AIA States that all ground works will be restricted to areas more than 25m from the edge of Ancient Woodland (C-216). Thereby avoiding potential damage to tree roots, changes in local hydrology and providing space to contain any accidental pollutant spillages. This 25m stand-off is more than the 15m minimum recommended by Natural England and the Forestry Commission given in Standing Advice." This is satisfactory and positive to see. In addition, it is good to see that this construction method has also been proposed where the cable route will pass under the Jockeys Meads field and Washington Village recreation ground and will ensure 16 that the trees within the area will be unaffected by the below-ground works, due to the 6m depth of the cable tunnels.	The retention and protection of valuable trees, including ancient woodland is recognised by the Applicant and is reflected in the design of the Proposed Development and use of trenchless crossing techniques where possible and appropriate.
2.5.41	- Veteran tree survey method and impact 6.31 The AIA shows that only 7 Veteran trees have been recorded, though the documents acknowledge that veteran trees may be found in the unsurveyed areas along the DCO. In this instance, the survey method used to identify veteran trees is set out in para 4.8 –4.8.1 to 4.8.15 of the AIA. The assessment has been guided by the definition of a veteran tree provided in the National Planning Policy Framework ('NPPF'), which is widely used as the standard definition for planning decisions in England. The NPPF defines veteran trees are defined as those being collectively of an age, size and condition, and are of exceptional biodiversity, cultural or heritage value. This assessment method appears robust, and HDC do not have any significant concerns with how the AIA has recorded veteran trees. At the same time, it is acknowledged that a relatively high number of trees surveyed display some veteran characteristics; however, despite this, they would need to satisfy all the tests to meet the definition of 'veteran' set by NPPF.	The Applicant has no further comments on this matter at this time.
2.5.42	- Tree Removal, Management and Mitigation Planting 6.32 The total percentage of trees indicated for removal accounts for 6.5% of the total number of trees surveyed; this is shown in Table 7-1 para 7.3.1 of the AIA. Table 7-3 of the AIA provides a breakdown of the tree stock indicated for removal according to the category allocated to the trees under BS5837, i.e., cat A, B and C.	The Applicant has no further comments on this matter at this time.
2.5.43	- Individual tree removal 6.33 In total, 15 individual Cat A trees would need to be removed; these account for 5% of the total amount of Cat A trees surveyed. 36 Cat B trees, 9% of the total surveyed, 10 Cat C trees, 10% of the total surveyed and 5 Cat U trees, 10% of the total surveyed.	The Applicant has no further comments on this matter at this time.

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2.5.44	- Tree group removal 6.34 In total, 9 groups of Cat A trees would need to be removed; this accounts for 12% of the total amount of groups of Cat A trees. 25 Cat B groups, 10% of the total surveyed, and 55 Cat C trees, 14% of the total surveyed; no Cat U groups are indicated for removal. 6.35 From the submitted data, the removal of trees, groups of trees and woodland by canopy area equates 68% and 52% of hedgerow removal this is associated with open-cut cable installation. 6.36 The extension of the existing National Grid Bolney Substation represents 10% of tree removals by canopy area, but no hedgerow removal is proposed. 6.37 To accommodate the new Oakendene Substation, 11 Category A trees and 10 Category B trees are proposed to be removed; this is associated with 9% of tree removals by canopy area and 40% of hedgerow removals for the scheme. 6.38 Para 7.4.5 of the AIA suggests that 5% of Cat A trees surveyed would need to be felled, which is lower than the overall percentage of the Cat A tree surveyed (29%), and 9% of the Cat B trees surveyed would also need to be felled out a total population rate of 40%. 6.39 The proposed replacement planting appears robust and commiserate for the number and size of the trees and groups indicated for removal; this is set out in Para 8.5.7 and Table 8-1 Indicative Tree replacement rates of the AIA. However, it should be noted that 17 the younger trees proposed to be removed are, of course, more readily replaceable, while the older trees are not. Any replacement tree, even if of heavy-duty nursery stock, would take many years to reach a similar stature as the mature trees indicated for removal and thus would take many years to reinstate an equivalent level of visual amenity and ecological benefits that mature trees provided.	The Applicant welcomes HDC's comment on the robustness of the replacement tree planting plans, and the Applicant agrees that new trees of variable nursery stock size and species will develop relatively slowly. The approach taken in the **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the Environmental Statement (ES) **[APP-194]** is to provide a greater number of replacement trees for the removal of larger trees to offset the net loss of canopy area and reduction in average tree size. A calculation rate for the replacement of individual trees to be removed is presented as a function of their current stem size within the **Appendix 22.16: Arboricultural Impact Assessment , Volume 4** of the ES **[APP-194]** and secured by Commitment C-286 within the **Outline Landscape and Ecology Management Plan (LEMP) [APP-232]** secured via Requirement 12 within the **Draft Development Consent Order [PEPD-009]**. In this way the amount of replacement planting would respond to the scale of impact and mean as an example, that up to 14 new trees would be provided for the loss of a single tree at Oakendene Substation in some instances. Groups and woodland would also be replanted at a higher area ratio than that being removed depending on the median stem size and at least an equal length of removed hedgerow would be planted. These measures have been designed to ensure that there is no net loss of arboricultural value in the longer term and no permanent degradation of the treescape.
2.5.45	- Tree pruning works 6.40 Para 8.2.5 of the AIA suggests that A detailed schedule of all proposed tree pruning would be produced with annotated plans as part of an Arboricultural methods statement AMS to be provided at a later date. This would include operational standards for all types of pruning and tree felling method according to best practice. I do not have any significant concerns with this proposal.	The Applicant has no further comments on this matter at this time.
2.5.46	- Tree Protection 6.41 The proposed tree protection as advised in section 8.3 is satisfactory and in accordance with the current industry standard British Standard 5837:2012;	The Applicant has no further comments on this matter at this time.
2.5.47	- The Oakendene Substation Site 6.42 The draft DCO seeks consent in outline only for the substation element of the proposed development. Design matters are, therefore, reserved for later determination, however, to demonstrate how the proposed quantum of development can be delivered an illustrative layout was submitted.	The Applicant agrees and has no further comments on this matter at this time.

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	6.43 It is noted the substation is not a special landscape area or particularly visible from the wider area but there are local considerations of the setting of Oakendene Manor associated landscape parkland; views from ProW 1786 near Taintfield Wood, towards Oakendene Manor; and the appearance and character of immediate surroundings, which are important considerations. To this extent these matters are to be addressed at reserved matters stage. 6.44 However, the draft DCO and Design and Access Statement does include parameters for the substation site and the design principles with which the detailed design could accord, providing a degree of control over the future design of the onshore infrastructure; as the principles established will inform the detailed design phase as the finalised layout and size of the substation, access tracks and sustainable drainage solutions (SuDS). The illustrative layout, The Oakendene Onshore Substation – Indicative Landscape Plan in Appendix D of the Design and Access Statement, shows one way this could be achieved. 6.45 The Architectural Strategy (determining building colour, texture, and roofline or profile of buildings and roofline) will also be required to soften the visual appearance of the substation in any remaining views to reduce its visibility from the wider landscape and when viewed from the surrounding area.	
2.5.48	6.46 To address residual visual impacts through new hedgerow and tree planting within a radius of the substation will help reinforce the character of the land use and be used to address visual impacts from key views as identified through the ES. HDC believes that without this agreement the residual impacts of the substation would be unacceptable and consequently consider that it meets the test of development consent obligations.	The Applicant will continue to engage with HDC and seek clarification on these points.
2.5.49	6.47 Lighting requirements (for scheduled maintenance outages or emergencies) within the substation will be directed downward and shielded to reduce glare outside the facility. The principles of lighting design will be informed by the joint guidance provided by the 18 Bat Conservation Trust and Institution of Lighting Professionals (2018). The lighting design will account for the potential effects on people (residents, road users, walkers and tourists) and biodiversity by taking measures to minimise lighting use, minimise light spill, use most appropriate wave lengths of light and locate lighting in the most appropriate locations.	The Applicant agrees and has no further comments on this matter at this time.
2.5.50	6.48 Along the A272 outside of visibility splays and access requirements, existing roadside vegetation (trees and hedgerow) will be maintained, and hedgerow height managed to infill any gaps and allow it to grow to an increased height. Increased native woodland planting will be provided to the south of the existing hedgerow to increase roadside screening. The site access road will include a curve or 'S' bend, with planting to prevent a direct line of sight from the A272 of the substation.	The Applicant agrees and has no further comments on this matter at this time.
2.5.51	7. Air Quality 7.1 Air quality issues have been identified. Clarification is required regarding the extent to which the Air Quality and Emissions Mitigation Guidance for Sussex (2021) was given consideration in assessing and mitigating the emissions, as is the expectation for any major development.	**Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** has considered the Air Quality and Emissions Mitigation Guidance for Sussex (Mid Sussex District Council, 2021) in defining the scope of the assessment and in particular the extend of any construction traffic modelling required for the Proposed Development.

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	7.2 The overarching principle of the Sussex guidance is to, as far as it is possible, design emissions out of a scheme, and mitigate or offset any residual emissions. Thus, the guidance aligns with the aims of Defra's Clean Air Strategy on reducing emissions to protect health and protect the environment, and the HDC environmental policy, which is why it is essential applicants adhere to its principles.	The Applicant concludes no significant effects on air quality are likely and does not consider that the Proposed Development meets the criteria set out in the Air Quality and Emissions Mitigation Guidance for Sussex for an air emissions mitigation strategy. However, recognising Horsham District Council's concerns, the Applicant is preparing an Air Quality Mitigation Plan in accordance with the Sussex Guidance. This includes damage cost calculations and preparing an Air Quality Mitigation Plan for Horsham District Council to address impacts from construction traffic associated with the onshore substation works at Oakendene on the Cowfold Air Quality Management Area (AQMA).
2.5.52	Construction Phase 7.3 During site clearance, preparation and construction there is the potential for local residents to experience adverse impacts from noise, dust and construction traffic movements. These should be minimised and controlled by the developer and a construction environmental management (CEMP) plan. 7.4 It is expected that the Dust Management Plan to be prepared accounts for emissions of off road construction vehicles. The recommendation would be to ensure all Non Road Mobile Machinery and constant speed engines comply with the requirements of the London Low Emission Zone and the London LEZ Non-Road Mobile Machinery/constant speed engines standards. 7.5 Construction traffic will use the strategic route network in the district. Welcomed is Environmental measure C-158 which proposes the proposed heavy goods vehicle (HGV) routeing during the construction phase to individual accesses will avoid the Air Quality management Area (AQMA) in Cowfold where possible. Proposed routeing set out in Outline Construction Traffic Management Plan (CTMP). Enforcement of the outline CTMP is secured through commitment C-158. 7.6 The key concern is that the Outline Construction Traffic Management Plan (CTMP) does not account for emissions of the on road and off road construction traffic. Section 8.4.11 of the CTMP proposes to use Euro V on road vehicles "or better whenever possible". The emission rates for Euro V heavy duty vehicles are circa 50% higher for PM and Nox compared to those of Euro VI vehicles – so it makes a significant difference what emission standard gets adopted. 7.7 The concern is also that the details of the final HGV routes are not known, and whether those mirror the assumptions used to model the impacts.	**Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** presents the construction dust assessment from the different components of the Proposed Development, undertaken in line with the Institute of Air Quality Management (IAQM) (2016) guidance on '*Assessment of Dust from Construction and Demolition'* following best practice. The assessment identifies suitable mitigation according to the risk of dust impacts from the different components of the Proposed Development to ensure appropriate mitigation measures are applied. The relevant dust mitigation measures form part of the **Outline Code of Construction Practice (CoCP) [PEPD-033]** which includes an embedded environmental measure to produce Dust Management Plans for the areas within the proposed DCO Order Limits that are associated with medium dust risk. The **Outline CoCP [PEPD-033]** is underpinned by commitment C-24 of the **Commitment Register [APP-254]** (provided at Deadline 1 submission). The **Outline CoCP [PEPD-033]** secured in Requirement 22 of the **Draft Development Consent Order [PEPD-009]**. The **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a**] has been updated at the Deadline 1 submission to state that all vehicles used in the construction of the onshore elements of the Proposed Development will be to a EURO standard VI class or better wherever possible. The **Outline CTMP [PEPD-033]** is secured in Requirement 24 of the **Draft Development Consent Order [PEPD-009]**. The assessment within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and the **Chapter 32: ES Addendum, Volume 2** of the ES **(Document Reference: 6.2.32)** (submitted at Deadline 1) is based on construction traffic flow estimates as described in **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[APP-197]** which has been updated at the Deadline 1 submission. All assumptions within **Appendix 23.2: Traffic Generation Technical Note, Volume 4 of the ES [APP-197]** (updated at the Deadline 1 submission) follow prescribed traffic routing for HGVs set-out in the **Outline CTMP [PEPD-035a**] which has been updated at the Deadline 1 submission. Stage specific CTMPs will be submitted to and approved by the highway authority in consultation with the relevant planning authority prior to commencement of each stage of works in accordance with the **Outline CTMP [PEPD-035a**] (Requirement 24 within the **Draft Development Consent Order [PEPD-009]**.
2.5.53	Model set up and methodology 7.8 Clarification needed to understand the assumptions used the Assessment Scenario. The concern is that the Assessment Scenario includes assumptions on HGV routing which may not materialise for project implementation.	**Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** present the results of the construction traffic modelling. Section 3 of this ES addendum (**Document Reference: 6.2.32**) presents an updated assessment of the likely significant air quality effects of construction traffic emissions expected from Rampion 2 in light of the new traffic data

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	7.9 Regarding model verification (Appendix 19.1: Full results of construction road traffic modelling), full information is required on the methodology to select monitoring sites for model verification. It is noted that the worst-case site (Cowfold 37) was not used in model verification, neither were a number of other sites. Details are therefore required of the initial verification including Monitored Road Nox Contribution versus Unverified Modelled Road Nox, which monitoring sites were used, and which were removed from the verification process with justification for both. It is recommended that all statistical parameters for model performance including the RMSE, fractional bias and correlation coefficient, be presented to give a full picture of the model performance, in line with the recommendations of the TG(16) guidance. 7.10 Clarification is sought on why the latest LAQM tools such as background maps and Emissions Factors Toolkit were not used in the air quality assessment, given that Revision A of the assessment is dated August 2023. 7.11 Also sought is clarification regarding the choice of meteorological data to model Cowfold. Data from Shoreham station does not reflect the conditions at Cowfold.	produced. The results of this assessment have been compared with the results of the assessment of air quality effects of construction traffic emissions reported in the **Chapter 19: Air quality, Volume 2 of the ES [APP-060]**. Model verification has been updated as part of the detailed modelling assessment of construction traffic effects within Cowfold. The results of this updated model verification are reported within **Chapter 32: ES Addendum, Volume 2** of the ES **(Document Reference 6.2.32)** (submitted at Deadline 1) in **Appendix B: Full results of Cowfold AQMA assessment**. This details the use of more monitoring locations which report annual averaged concentrations of nitrogen dioxide (NO_2) during 2019 to incorporate into the model verification. The Cowfold Air Quality Management Area (AQMA) model verification report, within the **Chapter 19: Air quality, Volume 2** of the Environmental Statement (ES) **[APP-060]**, has been updated in the **Chapter 32: ES Addendum, Volume 2** of the ES **(Document Reference 6.2.32)** (submitted at Deadline 1) to include more monitoring locations within the Cowfold AQMA, including Cowfold 37. The verification of the modelling output was performed in accordance with the methodology provided in LAQM.TG(22) (Department for Environment, Food and Rural Affairs (Defra), 2022). The assessment of construction traffic effects within Cowfold AQMA has used meteorological data from the Gatwick Airport observing station and from Shoreham to enable a comparison of the model outputs. This is reported within Section 3 of **Chapter 32: ES Addendum, Volume 2** of the ES **(Document Reference 6.2.32)** (submitted at Deadline 1) where clarification regarding the choice of meteorological data is provided.
2.5.54	Health Damage Cost Calculation. 7.12 The emissions calculation and total calculated value of emissions' health damage cost associated with construction traffic were not included in the DCO Documents. 7.13 Understanding costs is essential to effective and necessary mitigation and Table 19-7 of ES Volume 2, Chapter 19: Air quality confirms that the applicant agreed to "consider the inclusion of an air emissions mitigation strategy". However, the strategy was not included with the DCO submission. 7.14 Air Quality and Emissions Mitigation Guidance for Sussex (2021) takes a low-emission strategies' approach to avoid health impacts of cumulative development, by seeking to mitigate or offset emissions from the additional traffic and buildings. Hence, applicants are required to submit a mitigation plan detailing measures to mitigate and/or offset the impacts and setting out itemised costing for each proposed measure, with the total estimated value of all the measures being equal to the total damage costs. Air Quality Mitigation Plan for construction phase (air emissions mitigation strategy) 7.15 There is a lack of a standalone Air Quality Plan for the construction phase of the development. The concern is that air quality improvements in the Cowfold AQMA do not stall and that the improvements are continuous and maintained into the future. The Sussex	The requirement in the Air Quality and Emissions Mitigation Guidance for Sussex (Mid Sussex District Council, 2021) for damage cost calculations is not relevant to the majority of the Proposed Development considering its nature and scheduling. It is therefore anticipated, subject to a review of the revised traffic generation and considering the knowledge of the construction schedule, that damage costs will be calculated for the works at the onshore substation at Oakendene where construction is likely to last longest. This is in line with the HDC RR which highlights that the key concern is potential air quality effects on the Cowfold Air Quality Management Area (AQMA), located near the onshore substation at Oakendene. An Air Quality Mitigation Plan will be produced for the onshore substation at Oakendene.

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	guidance draws on Defra's methodology for the appraisal of impacts produced by a project. It requires that each application is supported by an air quality mitigation plan detailing measures to mitigate and/or offset the impacts and setting out itemised costing for each proposed measure. 7.16 An effective air quality plan would contain the following elements for each proposed measure: • Costings; • Performance indicators; • Delivery timescales. These are the essential mechanisms that enable authorities to work for the benefit of local communities and public health. It is essential that there is confidence that proper monitoring mechanisms and indicators are established at the outset and reviewed as necessary. 7.17 The proposed Air Quality Mitigation Plan should be informed by local monetisation of air quality impacts. Whilst this may not be a requirement of the National Networks National Policy Statement (NNNPS), this is a matter of local concern, as shown in the local guidance prepared by the Sussex Air Quality Partnership and participating members in 2021. There should be a Damage Cost Calculation for the air quality impacts, and the Transport Analysis Guidance forms the basis for the calculation	
2.5.55	8. Noise and Vibration Construction Phase 8.1 The project will involve construction works in rural areas where background noise levels will be very low, particularly at night. An accurate assessment of noise and vibration impacts should be based on detailed information on the phasing, sequencing, and duration of construction activities. There is no information as to when this detailed information will become available or the type of information that will be provided.	The Proposed Development will involve construction works in rural areas and baseline noise monitoring has been undertaken to characterise receptors existing ambient noise levels. The assessment of construction noise in **Chapter 21: Noise and vibration, Volume 2** of the Environmental Statement (ES) **[PEPD-018]** has considered these. In locations where it was not possible to determine baseline levels, the lowest cut-off levels for construction noise have been used for the assessment. This is considered a robust and conservative approach to the assessment of construction noise. A programme of works will be supplied to the relevant planning authorities prior to onshore construction commencement, identifying the stages of the works, secured by Requirement 10 of the **Draft Development Consent Order [PEPD-009]**. A Noise and Vibration Management Plan will be drafted for each stage, and approved prior to the commencement of that stage, secured by Requirement 22 of the **Draft Development Consent Order [PEPD-009]**.
2.5.56	8.2 The description of the construction works as temporary does not fully reflect the potential for adverse impacts. The construction compounds will be in operation for at least 3 years. Sites along the cable route will also entail construction of haul roads and may host additional works such as cable jointing which further extends the duration of operations at these sites.	BS 5228 (BSI, 2014a) provides criteria for the assessment of noise over a period of time. There will be temporary periods of time where noise will be high outside residences. Timescales of different construction aspects were specified in in Section 21.9 **Chapter 21: Noise and vibration, Volume 2** of the ES **[APP-062]**. In Section 21.15, the assessment concluded that the potential effect during the construction phase will be negligible to minor adverse following the implementation of embedded environmental measures, which is not significant in terms of EIA.

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		The **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** outlines management measures and mitigation proposed at all onshore construction areas to reduce the effects relating to noise and vibration from construction of the Proposed Development, including commitments C-10, C-26, and C-263. Commitment C-263 for the production of a Noise and Vibration Management Plan (NVMP) during detailed design based on the principles in the **Outline CoCP** **[PEPD-033]**, detailing best practicable means and location specific mitigation. The NVMP will be based on further assessment on where noisy construction activities, including piling will occur. Additional measures will be considered at these locations, such as mufflers, acoustic shrouds, and temporary noise barriers, where appropriate. The **Outline CoCP** **[PEPD-033]** includes an embedded environmental measure to produce Dust Management Plans for the areas within the proposed DCO Order Limits that are associated with medium dust risk. The **Outline CoCP** **[PEPD-033]** is underpinned by commitment C-24 of the **Commitment Register** **[APP-254]** (updated at Deadline 1 submission) which outlines that '*Best practice air quality management measures will be applied as described in Institute of Air Quality Management (IAQM) (2016) guidance on the Assessment of Dust from Demolition and Construction 2016, version 1.1*'. The **Outline CoCP** **[PEPD-033]** is secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**.
2.5.57	8.3 For construction noise the assessment of impact has been undertaken with regard to Annex E of BS5228-1 and particularly the thresholds of significant effects. Annex E details several methodologies for assessing impacts but for all significant impacts from construction noise are only considered to occur above 65dBLAeqT. As noted above, the works will take part in areas where background noise levels are low and therefore adopting this approach may not fully portray the noise impacts from the construction phase. For longer term construction projects lower noise limits should be considered.	This comment appears to refer to paragraph E.5 in Annex E of British Standard BS5228-1. However, the criteria within E.5 are specifically related to long term earth moving in a single area, akin to surface extraction works, which does not represent the construction activity within the Proposed Development. The Applicant considers that as the advice within Annex E paragraph E.2 is more appropriate. Paragraph E.2 states *"For projects of significant size such as the construction of a new railway or trunk road, historically, there have been two approaches to determining whether construction noise levels could be significant. The older and more simplistic is based upon exceedance of fixed Ise limits..."* Paragraph E.2 provides an example of the fixed limits approach *"Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut. The noise can be measured with a simple sound level meter, as we hear it, in A-weighted decibels (dB(A))– see note below. Noise levels, between say 07.00 and 19.00 hours, outside the nearest window of the occupied room closest to the site boundary should not exceed:* • *70 decibels (dBA) in rural, suburban and urban areas away from main road traffic and industrial noise;* • *75 decibels (dBA) in urban areas near main roads in heavy industrial areas.* *These limits are for daytime working outside living rooms and offices. In noise-sensitive situations, for example, near hospitals and educational establishments – and when working outside the normal hours say between 19.00 and 22.00 hours – the allowable noise levels from building sites will be less: such as the reduced values given in the contract specification or as advised by the Environmental Health Officer (a reduction of 10 dB(A) may often be appropriate)."*

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		But E.2 goes on to state that *"The above principle has been expanded over time to include a suite of noise levels covering the whole day/week period taking into account the varying sensitivities through these periods. Examples are provided in E.3.2 (see Table E.1) and in E.4 (see Table E.2), and the levels shown in Table E.2 are often used as limits above which noise insulation would be provided if the temporal criteria are also exceeded."* As such the approach to construction noise assessment within **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]** (the ABC method as specified within E.3.2) is consistent with the method as set out by BS5228-1 as being appropriate for the assessment of construction noise related to construction projects of significant size. The Applicant considers that the assessment uses the correct methodology.
2.5.58	8.4 The adoption of the thresholds quoted in Annex E to BS5228-1 as LOAELs and SOAELs is questioned. BS5228-1 does not reference WHO documents and principally relies on publications regarding protection of site workers from noise. The assessment methodology in Annex E states that other project-specific factors, such as the number of receptors affected and the duration and character of the impact, will also determine if there is a significant effect.	The determination of the Lowest and Significant Observable Adverse Effect Levels is on the basis of the semantic description in Planning Practice Guidance – Noise (PPG-N) (Ministry of Housing, Communities and Local Government (MHCLG), 2019) "Noise Exposure Hierarchy". Although the selection of where the lowest observable adverse effect level (LOAEL) and significant observable adverse effects level (SOAEL) for the Proposed Development can be argued, the advice in PPG-N (MHCLG, 2019) is that levels above the LOAEL should be mitigated and reduced to a minimum, and as such by following BS5228-1, the Code of Practice for Construction Noise, noise will be mitigated and reduced to a minimum in line with the planning practice guidance note. The Applicant draws attention to the fact that BS5228-1 is a statutorily supported approach to assessment of construction noise. Section 71 of the Control of Pollution Act 1974 (CoPA74) provides the Secretary of State the power to prepare and approve codes of practice for the purpose of giving guidance on appropriate methods for minimising noise; including the power to approve such codes of practice issued or proposed to be issued otherwise than by the Secretary of State as in the opinion of the Secretary of State are suitable for the purpose. The *Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015* approves BS5228- 1 as the code of practice for assessing construction noise under Section 71 of CoPA74. That the standard does not refer to World Health Organisation (WHO) guidelines (1999; 2009) does not diminish its standing as the primary resource in the UK by which, construction noise significance is established and the mechanisms by which such noise should be controlled.
2.5.59	8.5 It is important to ensure the potential noise impacts for the receptors are fully understood beyond the narrow confines of BS5228-1. The Applicant should illustrate the potential magnitude of the noise impacts by comparing the predicted construction noise levels to the existing ambient noise levels at each receptor location.	British Standard BS5228-1 is the Secretary of State (SoS) recommended guidance for construction noise. The Applicant has illustrated the potential magnitude of the noise impacts by comparing the predicted construction noise levels to the existing ambient noise levels at each receptor location. The Applicant has assessed the magnitude of impact with reference to BS5228-1 Annex E which states *"Noise levels generated by site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site*

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		noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB from site noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in significant effect."
2.5.60	8.6 The methodology for the identification of receptors is not clearly explained. This is important for establishing if all relevant receptors have been identified and factors such as differences in topography have been included in determining the predicted construction noise levels.	Although certain receptors are named as being representative, and these will generally be the nearest receptor to an element of the works, all receptors within the Study Area, which is defined within Section 21.4 of the **Chapter 21: Noise and vibration, Volume 2** of the Environmental Statement (ES) **[PEPD-018]**, have been assessed. Topography is included in the noise models and assessed accordingly.
2.5.61	8.7 Noise sensitive receptors for short term works such as cable route construction are not considered. These works may be of limited duration, but this doesn't mean the noise impacts should not require assessment and mitigation, particularly when mobile plant such as generators are deployed. The construction of haul roads and cabling works could extend the periods of noisy activity close to sensitive receptors beyond the 10 days presumed for cable route construction.	8.7 Although a quantitative assessment may not have been carried out for such works as the onshore cable installation, it would be incorrect to say no assessment has been undertaken, as the cable route is assessed qualitatively in paragraphs 21.9.46 to 21.9.53 within **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018].** The assessment within **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]** concludes that the potential effect during the construction phase will be negligible to minor adverse following the implementation of embedded environmental measures, which is not significant in terms of EIA. The **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** outlines management measures and mitigation proposed at all onshore construction areas to reduce the effects relating to noise and vibration from construction of the Proposed Development, including Commitments C-10, C-26, and C-263 (**Commitments Register** **[APP-254]** updated at the Deadline 1 submission). Commitment C-263 includes the production of a Noise and Vibration Management Plan (NVMP) during detailed design based on the principles in the **Outline CoCP** **[PEPD-033]**, detailing best practicable means and location specific mitigation and secured by Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. The NVMP will be based on further assessment on where noisy construction activities, including piling will occur. Additional measures will be considered at these locations, such as mufflers, acoustic shrouds, and temporary noise barriers, where appropriate.
2.5.62	8.8 Short term works are also excluded from the consideration of cumulative impacts on the grounds these will be of limited duration. Given the uncertainties regarding the potential phasing, duration and impacts of such works this exclusion is not justified.	The works excluded from cumulative assessment are those that are of such a short duration that it would not be possible to quantify any such accumulation. The construction work for the Proposed Development has potential to affect the areas closest to the trenching line for a short duration whilst the works occur in that location, then once complete the works will move along the onshore cable route and not impact receptors. However, this temporary impact will not be significant.
2.5.63	8.9 Noise impacts from trenchless crossings at night are a concern. Predicted night noise levels have identified receptors significantly above BS5228 threshold screening adopted in the Environmental Statement. It is proposed that screening will be deployed to reduce these impacts. The effectiveness of screening will depend on several factors. These include the height, mass and length of the barrier and the position of noise source relative to the identified receptor. Noise from construction equipment contains particular frequency components and these are not all attenuated to the same degree by a barrier. It should not be assumed the predicted mitigation will be achieved.	Experience of monitoring noise from construction sites gives the Applicant confidence that using temporary acoustic screening is a suitable mitigation strategy. The diminishment of performance over certain frequencies is a valid concern, nevertheless, with mitigation measures applied, significant effects are avoided. The **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** outlines management measures and mitigation proposed at all onshore construction areas to reduce the effects relating to noise and vibration from construction of the Proposed Development, including

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		Commitments C-10, C-26, and C-263 (**Commitments Register** **[APP-254]** updated at the Deadline 1 submission). Commitment C-263 includes the production of a Noise and Vibration Management Plan (NVMP) during detailed design based on the principles in the **Outline CoCP** **[PEPD-033]**, detailing best practicable means and location specific mitigation and secured by Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. The NVMP will be based on further assessment on where noisy construction activities, including piling will occur. Additional measures will be considered at these locations, such as mufflers, acoustic shrouds, and temporary noise barriers, where appropriate.
2.5.64	8.10 An Outline Code of Construction Practice (CoCP) has been provided which confirms that stage specific CoCP will be submitted along with a Noise and Vibration Management Plan (NVMP). These documents will detail the mitigation measures to be adopted but have yet to be submitted. This results in considerable uncertainty as to the deployment and efficacy of the mitigation measures. Noise levels above the predicted levels will only be addressed retrospectively which would severely limit the ability to resolve such impacts.	**Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]** assessment concluded that the potential effect during the construction phase will be negligible to minor adverse following the implementation of embedded environmental measures, which is not significant in terms of EIA. The **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** outlines management measures and mitigation proposed at all onshore construction areas to reduce the effects relating to noise and vibration from construction of the Proposed Development, including Commitments C-10, C-26, and C-263 (**Commitments Register** **[APP-254]** updated at the Deadline 1 submission). Commitment C-263 includes the production of a Noise and Vibration Management Plan (NVMP) during detailed design based on the principles in the **Outline CoCP** **[PEPD-033]**, detailing best practicable means and location specific mitigation and secured by Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. The NVMP will be based on further assessment on where noisy construction activities, including piling will occur. Additional measures will be considered at these locations, such as mufflers, acoustic shrouds, and temporary noise barriers, where appropriate.
2.5.65	8.11 The noise impacts are assessed on the basis that most of the site works will take place in the normal weekday hours (07:00 to 19:00). The need for additional working outside these times should be limited to emergency works only and should not be relied on.	Working hours are stated in Section 4 of **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** and are outlined in Section 4.4 of the **Outline Code of Construction Practice** **[PEPD-033]**. Following receipt of Relevant Representations and information shared at Issue Specific Hearing 1, C-22 within the **Commitments Register** **[APP-254]** has been updated at the Deadline 1 submission to the following: '*Core working hours for construction of the onshore components will be 08:00 to 18:00 Monday to Friday, and 08:00 to 13:00 on Saturdays, apart from specific circumstances that are set out in the Outline COCP, where extended and continuous periods of construction are required.* *Prior to and following the core working hours Monday to Friday, a 'shoulder hour' for mobilisation and shut down will be applied (07:00 to 08:00 and 18:00 to 19:00). The activities permitted during the shoulder hours include staff arrivals and departures, briefings and toolbox talks, deliveries to site and unloading, and activities including site and safety inspections and plant maintenance. Such activities shall not include use of heavy plant or activity resulting in impacts, ground breaking or earthworks.'*

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		This has been updated in the **Outline Construction Traffic Management Plan [PEPD-035a]** for the Deadline 1 submission and will be updated in the **Outline Code of Construction Practice [PEPD-033]** for the next submission of this document. As outlined in the **Outline Code of Construction Practice [PEPD-033]**, no activity outside these hours (including Sundays, public holidays, or bank holidays) will take place apart from under the following circumstances: • Where continuous periods (up to 24 hours, 7 days per week) of construction work are required for HDD (as HDD is a continuous activity that cannot be paused once started); • for other works requiring extended working hours such as concrete pouring which will require the relevant planning authority to be notified at least 72 hours in advance; • or the delivery of abnormal loads to the connection works, which may cause congestion on the local road network, and will require the relevant highway authority to be notified at least 72 hours in advance; or • as otherwise agreed in writing with the relevant planning authority. Any out of work hours beyond those listed above will be detailed by a Section 61 application of the Control of Pollution Act 1974 with agreement sought by the relevant Local Planning Authority. Commitment C-263 includes the production of a Noise and Vibration Management Plan (NVMP) during detailed design based on the principles in the **Outline Code of Construction Practice [PEPD-033]**, which is secured by Requirement 22 of the **Draft Development Consent Order [PEPD-009]**.
2.5.66	8.12 The proposals for construction noise monitoring are inadequate for a project of this scale and duration. Construction noise monitoring should be undertaken proactively by the developer to ensure that the site works are complying with required target noise limit. Compliance checking should be undertaken regularly at every location where noise sensitive receptors may be impacted by noise arising from construction activities. It should not be for the local planning authorities to resource routine compliance checking of the developer's construction noise targets.	The **Outline Code of Construction Practice [PEPD-033]** is secured through Requirement 22 of the **Draft Development Consent Order [PEPD-009]** and provides the relevant planning authority the opportunity to request that construction noise monitoring is undertaken during specific activities or at specific receptors as outlined in paragraph 5.4.15. The requirement for noise monitoring will be identified by the Contractor(s) based on the confirmed list of plant and equipment and construction programme and a monitoring framework will be provided in the stage specific Noise and Vibration Management Plan (NVMP). The monitoring proposals are equivalent to other Nationally Significant Infrastructure Projects of this size and nature.
2.5.67	8.13 There are no sanctions or penalties proposed in the draft DCO to deal with noncompliance with the construction noise and vibration targets. The procedure for arbitration set on 15 of the DCO is unlikely to respond effectively to identified noncompliance with the CoCP or NVMP's.	The measures to control noise and vibration during the construction phase will be outlined within a Noise and Vibration Management Plans that is to be discharged for each relevant stage, in accordance with Requirement 22 of the **Draft Development Consent Order [PEPD-009]**. Measures for noise control during the operation and maintenance phase will be secured through Requirement 28 of the **Draft Development Consent Order [PEPD-009]**. The local planning authority is the enforcing body for compliance with a made Development Consent Order, under Section 161 of the Planning Act 2008, which states that a person commits an offence if they fail to comply with the terms of an order granting development consent.

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2.5.68	8.14 The Construction Communications Plan should include provision for regular local meetings with representatives for the communities where the construction compounds will be sited. The costs should be met by the developer.	Section 2.6 within the **Outline Code of Construction Practice (CoCP) [PEPD-033]** provides an overview of the community liaison approach during the construction phase in and states that the Applicant will produce a Construction Communications Plan prior to the commencement of construction for approval with the relevant planning authorities and this will be secured through Requirement 22 of the **Draft Development Consent Order [PEPD-009]**. The Construction Communications Plan will: • outline the Proposed Development; • build on stakeholder engagement carried out throughout development to strengthen relationships with key stakeholder organisations and individuals, alongside the wider community; • identify a range of communication tools, methods and opportunities to reach this target audience and enable them to reach the construction team; • include a range of communication materials designed to reach the target audience; • include a series of tailored Communication and Mitigation Plans to provide more detail for local communities along the 38.8km onshore cable route; • produce dedicated Communications Plans for special interest user groups; and • such as fishers, diver and public rights of way users; and set out the complaints procedure.
2.5.69	8.15 The volume of HGVs and the consequential impacts on noise levels experienced by receptors is not predicted to be of a level of warrant.	Noted, the Applicant has no further comments on this matter at this time.
2.5.70	8.16 In terms of construction noise, the draft DCO provides for a written scheme for noise management to be agreed with HDC. This, combined with limited the working hours and 22 deployment of appropriate mitigation to further reduce disturbance set out in the outline CoCP, should control noise impacts during construction to an acceptable level.	The Applicant welcomes Horsham District Council's relevant representation and has no further comments on this matter at this time.
2.5.71	Operational Phase 8.17 From reviewing Table 21-20 'Relevant noise and vibration embedded environmental measures' HDC notes that the following is stated under Commitment C-231 - The detailed substation design will be built and operated such that the Rating levels (noise emissions plus any character correction) do not exceed the following noise levels at the private amenity space associated with the closest residential receptors.	Noted, the Applicant has no further comments on this matter at this time.
2.5.72	8.18 Given the low background noise levels in this part of our District, in particular during the nighttime hours, HDC considers that the proposed rated noise levels are too high and are at level where adverse impacts may be expected. 8.19 From reviewing Table 21-38 'Operational noise assessment – Onshore substation Unmitigated' it is apparent that the rated level during the night time hours (2300 – 0700) to be +7 above background at Oakendene Manor, +6 above background at Southlands and +5 above background at Westridge. From reviewing Table 21-39 'Operational noise	The low background sound levels are acknowledged, although it is understood that Horsham District Council would prefer that the Rating levels from such electrical infrastructure is mitigated to as low as level as possible, the assessment has to consider a range of factors in arriving at suitable limits British Standard (BS) 4142 (British Standard Institution (BSI), 2019) states *"Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the following.*

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	assessment – Onshore substation Mitigated' it is apparent that even with proposed mitigation the rated levels at Oakendene Manor during the night-time hours are still +5dB above background. 8.20 It is appreciated that report states that in accordance with the IEMA Assessment (2014) that the magnitude of change is 'very low'. However, with the above in mind, BS4142 makes it very clear however that the greater the noise level above background the greater the magnitude of impact, and, that a difference of +5dB is likely to be an indication of an adverse impact.	*1) The absolute level of sound. For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low.* *Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night."* Earlier versions of BS4142 defined +5dB as the onset of adverse impact, the current revision BS4142:2014 +A1:2019 is more nuanced (though it should also be recognised that the earlier versions of the standard (e.g. BS4142:1997) did include low background level cut-off below which the standard did not apply. The Association of Noise Consultants (ANC) Good Practice Working Group prepared a technical note on the use of the BS4142:2009 +A1:2019 (ANC, 2020 *BS 4142:2014+A1:2019 Technical Note*). The Technical Note, although being a discussion as opposed to a prescriptive guide, is considered within the industry to be an authority on how to interpret the technical elements of the standard. The Technical Note states *"BS 4142 does not indicate how the initial estimate of impact should be adjusted when background and rating levels are low, only that the absolute levels may be more important than the difference between the two values. It is likely that where the background and rating levels are low, the absolute levels might suggest a more acceptable outcome than would otherwise be suggested by the difference between the values. For example a situation might be considered acceptable where a rating level of 30dB is 10dB above a background sound level of 20dB, i.e. an initial estimate of a significant adverse impact is modified by the low rating and background sound levels may be situations where the opposite is true, and it is for the assessor to justify any modifications to the initial estimate of impact. BS 4142 does not define 'low' in the context of background sound levels nor rating levels. The note to the Scope of the 1997 version of BS 4142 defined very low background sound levels as being less than about 30 dB LA90, and low rating levels as being less than about 35 dB LAr,Tr. The WG suggest that similar values would not be unreasonable in the context of BS 4142, but that the assessor should make a judgement and justify it where appropriate.*" **Chapter 21: Noise and vibration, Volume 2** of the Environmental Statement **[PEPD-018]** makes these points and also ties the criteria used to World Health Organisation ((WHO), 2009) evidence to demonstrate that night operational rating levels are not significant at the proposed level of 35 decibels (dB).
2.5.73	8.21 It is also noted that the following is stated in section—1.3 of BS4142 - The standard is not applicable to the assessment of low frequency noise. Information on the assessment of low frequency noise is given in NANR45. Given the low frequency noise associated with the proposed substation HDC is of the view that an assessment in accordance with NANR45 is required in support of this application.	The ANC (2020) Technical Note on BS 4142 *BS 4142:2014+A1:2019 Technical Note* states " *Sound referred to as low frequency in NANR45 is energy within the 10 – 160 Hz frequency range. The Working Group considered that BS 4142 does not necessarily exclude such a wide range. It would be reasonable to use BS 4142 down to 50 Hz and possibly lower as part of a tonality assessment, for example*." This point was discussed with Horsham District Council (HDC) via email in August 2022. HDC Environmental Protection Officers stated at the time "*From re-visiting the ANC Technical Note I would like to make the following comments. We note the following is stated in the Technical Note it would be reasonable to*

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		use BS 4142 down to 50 Hz and possibly lower as part of a tonality assessment, for example. Given this we are of the view that an objective assessment of the tonal noise should form part of assessment...."
2.5.74	8.22 Further to the above it is noted that the following is stated Further discussion was undertaken with regard to low frequency noise. It was agreed with HDC that the assessment methodology within BS 4142:2019 (BSI, 2019) was sufficient to assess the effects of low frequency noise at the nearest noise sensitive receptors. HDC commented that BS 4142:2019 is not applicable to assess ground borne low frequency noise. These comments remain valid.	Although the representation mentions ground borne noise, such operational ground borne noise generation is not likely with the plant being installed. It is assumed that the author meant airborne noise. Following discussion with Horsham District Council (HDC) (August 2022, as stated in **reference 2.5.73** above), the Applicant undertook the assessment of low frequency noise to guidance standards (NANR45) in agreement with HDC. As this approach was previously agreed with HDC, the Applicant would like to understand the potential contradiction between the previous discussion with HDC and this comment in their RR.
2.5.75	8.23 In summary on operational phase, mitigated noise impacts at identified receptors are reliant on specific physical mitigation measures to be adopted at the substation including harmonic filter dampening, dampening and enclosures for transformers etc. Whilst it is understood that such mitigation would be secured where necessary to achieve noise specified noise limits, given the low background noise levels in part of the district, as quantified in the background noise monitoring, and given the impact from low frequency noise, as detailed above, HDC are of the view that the noise impacts have not been fully assessed and that noise levels below the levels as detailed in Commitment C-231 could still result in significant noise impact to residential amenity.	Horsham District Council (HDC) refers above in 8.18 (**reference 2.5.72**) that adverse impacts could be experienced due to the approximately +5dB difference between background and rating levels. As per the Applicant's response in **reference 2.5.72** above, the Applicant disagrees with this position. The suggestion that significant adverse impacts would be possible even if proposed limits are met has no basis in the guidance from BS4142 (British Standard Institution, 2019) or in the Noise Policy Statement for England (Department of Energy and Climate Change, 2010), or Planning Practice Guidance – Noise (Ministry of Housing, Communities and Local Government, 2019).
2.5.76	9. Transport 9.1 The focus of this RR is on the traffic and transport implications of the onshore elements of the proposals; the construction of the cable route and associated works; and permanent works including the Oakendene substation and vehicle accesses on the West Sussex transport network. 9.2 The Council endorses the comments of West Sussex County Council (WSCC) as the Local Highways Authority for Horsham District regarding the above matters. It is understood that reviewing the transport modelling work may be subject to further updates from the Applicant. In the first instance, HDC raises the following concerns:	The environmental effects of the construction traffic have been assessed in **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and the **Chapter 32: ES Addendum, Volume 2** of the ES **(Reference 6.2.32)** provided at the Deadline 1 submission. The Applicant has regularly engaged with West Sussex County Council during the pre-DCO Application stage and will continue to do so during the Examination with an aim of resolving any outstanding concerns.
2.5.77	Assessment Methodology 9.3 The assessment has been undertaken in accordance with rescinded and replaced guidance from IEMA, Guidelines for Environmental Impact Assessment of Road Traffic (1993). This was replaced in July 2023 by Environmental Assessment of Traffic and Movement. The ES should be reviewed against the latest guidance and as necessary amended.	Use of the Guidelines for the Assessment of Road Traffic (1993) was defined within the Applicant's request for an EIA Scoping Opinion submitted to the Planning Inspectorate on 2 July 2020 and following consultation with WSCC prior to the DCO Application being submitted. At the time of writing the Environmental Statement **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** in early 2023 the new Institute of Environmental Management and Assessment (IEMA) (2023) Guidance Environmental Assessment of Road Traffic and Movement (July 2023) had not been published. The Applicant will provide a note on the principal differences between the 1993 and 2023 Institute of Environmental Management and Assessment's (IEMA) Traffic Assessment Guidance (IEMA, 1993; 2023) documents and whether there would be difference in the outcome of the assessment if the latter was used at the Deadline 2 submission.

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2.5.78	9.4 WSCC is content with the base data used within the assessment. This data includes traffic surveys of all routes that will be used by construction traffic.	The Applicant has no further comments on this matter at this time.
2.5.79	Assessment of Effects 9.5 For the purposes of the transport network, it is acknowledged that most effects will occur during the construction phase and, as such, will be temporary in nature (albeit for an approximately four-year period). Once operational, traffic impacts will be minimal. Details of permanent, operational accesses, including that serving the onshore substation, are yet to be agreed with WSCC.	The environmental effects of the construction traffic have been assessed in **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and the **Chapter 32: ES Addendum, Volume 2** of the ES **(Reference 6.2.32)** provided at the Deadline 1 submission. The Applicant has entered into discussions with West Sussex County Council regarding the design requirements for key permanent access junctions, including at the onshore substation at Oakendene, with a view of reaching an agreement in principle on the proposals before the end of the Examination.
2.5.80	9.6 There remain areas of concern relating to transport matters as presented in the DCO submission documents. These relate primarily to construction phase impacts on the West Sussex transport network, and the concern about the measures outlined in the OCTMP (APP-228).	The **Outline Construction Traffic Management Plan** **[PEPD-035a]** (updated at Deadline 1 submission) includes mitigation measures to limit the effects of construction traffic associated with the Proposed Development. The Applicant will continue to discuss construction phase effects with West Sussex County Council with a view of resolving areas of concern prior to the end of the Examination.
2.5.81	9.7 The number, size, timing, and routeing of HGV (an abnormal load) vehicles is a substantive concern of local communities. HDC is aware of the strong feeling on this issue expressed by parishes at Storrington, Washington, and Cowfold and their local communities. The concerns also relate to the suitability of such vehicles on rural roads and general disturbance from increased level of activity.	The **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** includes details of required construction traffic routing for the Proposed Development. Heavy Goods Vehicle (HGV) traffic will avoid travelling through Cowfold and Storrington where possible as detailed in Table 5-2 of the **Outline CTMP** **[PEPD-035a]** and commitments C-157 and C-158 **Commitment Register** **[APP-254]** (provided at Deadline 1 submission). The **Outline CTMP** **[PEPD-035a]** is secured through Requirement 24 of the **Draft Development Consent Order** **[PEPD-009]**.
2.5.82	9.8 HDC shares concerns over the need for safe access to works and the need to encourage sustainable travel by workers. WSCC's highway assessment of the proposal will address these two matters in greater detail, amongst all other technical transport matters, reflective of their role as Local Highway Authority. HDC defers to the expert opinion of WSCC on whether the proposed visibility splay improvements and swept path diagrams, and proposed delivery numbers across the construction period, demonstrate the development area is accessible safely by way of temporary construction access and access routes.	The **Outline Construction Workforce Travel Plan (CWTP)** **[APP-229]** sets out principles for managing the effects of travel by construction personnel during the construction phase. The **Outline CWTP** **[APP-229]** sets out a plan to maximise the sustainability of travel methods used to get to and from onshore sites, as well as minimise the impacts on the local road network and by the association the local communities and road users in West Sussex. The **Outline CWTP** **[APP-229]** is secured through Requirement 24 of the **Draft Development Consent Order** **[PEPD-009]**. The Applicant has entered discussions with West Sussex County Council regarding junction design with a view of overcoming any areas of concern before the end of the Examination.
2.3.83	Mitigation, Compensation and Enhancement 9.9 The focus of the highway assessment provided by the Applicant is on the construction phase, which has been accepted by WSCC given the anticipated increase in traffic flows during this time compared with the operational phase. Although an OCTMP has been 24 submitted by the Applicant to provide mitigation during construction, there are several concerns set out below. i) Those relating to the physical construction access arrangements, including the overall number of accesses and the ability to achieve necessary visibility splays at identified accesses (including those to the main construction compounds).	It is noted that HDC's representation is the same as West Sussex County Council's (WSCC) in relation to Comment 9.9 (including i), ii) and iii) and 9.10. The Applicant's responses provided in **reference 2.3.31** have been included below. The **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** includes mitigation measures to limit the effects of construction traffic associated with the Proposed Development. The Applicant will continue to discuss construction phase effects with WSCC with a view of resolving areas of concern prior to the end of the Examination. In addition, the Applicant provides the following responses to the specific points made by WSCC and HDC:

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	ii) Areas where additional mitigation is necessary, including the provision of road safety audits and the management of traffic on single track roads. iii) Aspects where clarification is required or where information appears to be missing from the submitted information. This includes numbered accesses being missing or construction vehicle trips being absent from tables within the OCTMP. 9.10 HDC shares concerns over the need for safe access to works and defers to WSCC on whether the visibility splay and swept path diagrams, and proposed delivery numbers across the construction period, demonstrate the development area is accessible safely. 9.11 Additional comment is made in respects of measures within the Outline Operational Travel Plan (OOTP) (APP-227), set out below. i) In reviewing the submitted information, it is acknowledged that some construction traffic will route through the Air Quality Management Area (AQMA) in Cowfold. For the purposes of traffic routing, this traffic will make use of A-classed roads (the A281, which runs north to south, and the A272, which runs east to west). Notwithstanding the AQMA, considering their classification, these roads are appropriate for construction traffic. Further mitigation measures will nevertheless be expected for the purposes of managing traffic through the AQMA and Cowfold itself, and WSCC expects this traffic to be reduced to the minimum where possible. ii) Mitigation will need to be agreed for the end-of-life decommissioning. A commitment should be secured as part of the DCO requiring a decommissioning construction traffic management plan to be submitted and agreed with WSCC. This CTMP should be provided and agreed prior to decommissioning works commencing.	i). Section 4.4 of the **Outline CTMP** **[PEPD-035a]** provides details of visibility splay requirements for construction access junctions. Where it is proposed to use an existing farm gate accesses or farm tracks a visibility splay in accordance with Design Manual for Roads and Bridges will be provided by coppicing. Where this is not possible (for example due to ecological reasons) these accesses will be managed through traffic management. Further to this, the Applicant is also in discussion with WSCC on the visibility splays requirements at key accesses, with speed surveys being completed to inform visibility splay requirements. These speed surveys will be used to inform the requirements set out in the **Outline CTMP** **[PEPD-035a]** and access designs where these are being undertaken. ii). The Applicant is in discussion with WSCC on the requirements for Road Safety Audits and management of single-track roads. The Applicant will continue to discuss construction phase effects with WSCC with a view of resolving areas of concern prior to the end of the examination. iii). An updated to the **Outline CTMP** **[PEPD-035a]** was submitted at Procedural Deadline 1 which corrected these errors. On point 9.11 The Applicant believes that references to points i) and ii) is an error in HDC's relevant representation as these points do not refer to the Operational Travel Plan. However, the Applicant will discuss the **Outline Operational Travel Plan** **[APP-227]** with WSCC and will address any WSCC outstanding concerns during the Examination. The **Outline CTMP** **[PEPD-035a]** contains details of required construction traffic routing for the Proposed Development. Where possible HGV traffic has been routed via the A23 and from the east along the A272 avoiding Cowfold. Heavy goods vehicle (HGV) traffic has been minimised as much as possible as detailed paragraph 1.2.5, Commitment C-157 and C-158 **Commitment Register** **[APP-254]** (provided at Deadline 1 submission). Further discussions will be held with WSCC to establish appropriate mitigation measures for the Air Quality Management Area (AQMA) and Cowfold for inclusion within the **Outline CTMP** **[PEPD-035a]** secured by Requirement 24 within **Draft Development Consent Order (DCO)** [PEPD-009. ii) As stated in the **Outline CTMP** **[PEPD-035a]**, the decommissioning phase is anticipated to involve the removal and reinstatement of the onshore substation site at Oakendene and the existing National Grid Bolney substation extension. The onshore cable will be left in situ during the decommissioning phase. The decommissioning works are likely to be undertaken in reverse to the sequence of construction works and involve similar levels of equipment but much reduced numbers of vehicles for decommissioning. Paragraph 3.81 within the **Outline CTMP** **[PEPD-035a]** states that a decommissioning plan and programme will be developed prior to construction and updated during operation of Proposed Development to account for any changes to decommissioning best-practice and developments in technology. For onshore decommissioning, Requirement 34 within the **Draft Development Consent Order** **[PEPD-009]** secures the provision of an onshore

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		decommissioning plan with must be submitted to and approved by the relevant planning authorities.
2.5.84	9.12 Further mitigation for the purposes of managing traffic through the AQMA and Cowfold could include but not limited to: limits on all vehicular traffic in terms of volumes, timings, restricted hours, and duration of movements. detailed Phasing Strategy of the project. traffic monitoring and management details, with penalties and mitigation set out for exceeding limits. co-ordinated traffic flows limit, duration limits, time periods limits (e.g. limits on all vehicular traffic movements and measures to adhere to these limits; confirmation of the size of vehicles to access each part of the construction route network; restriction on movements between temporary compounds to outside the peak hours; requirement upon the applicant to secure agreement on the number of vehicles that can access the temporary compounds during peak hours; provide for HGV timing restrictions to be implemented where access routes coincide with access to school routes and to account for variations associated with the agricultural and tourism seasons; measures to ensure HGVs are marked in such a way that the public can associate them with Rampion 2 for monitoring and enforcement purposes. pre and post construction surveys to ensure any damage to the highway is remediated. review mechanisms should be set up to full range of impacts monitor and unforeseen consequences as the project develops, to review the adequacy of mitigation or compensation measures and adjust as necessary.	The **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** includes mitigation measures to limit the effects of construction traffic associated with the Proposed Development. Details of mitigation strategies, management and enforcement of construction traffic movements is contained within Section 8 and 9 of the **Outline CTMP** **[PEPD-035a]**. Further details of these measures will be contained within stage specific CTMPs secured through Requirement 24 of the **Draft Development Consent Order** **[PEPD-009]** and prior to construction of that stage of works which will follow the controls defined within the **Outline CTMP** **[PEPD-035a]**. These will be agreed with the Local Highway Authority (West Sussex County Council) in consultation with Horsham District Council.
2.5.85	10. Socio-economics 10.1 The Development Proposal presents opportunities for local businesses to become part of the on-and-offshore supply chain and provision of indirect services. However, it is not clear whether any local job opportunities would be created through the development to Horsham District, for example during the construction phase. Whilst the DCO provides for an Outline Skills and Employment Strategy document, with a commitment to a Supply Chain Plan, this Strategy does not provide sufficient detail on, amongst other things, tailored local initiatives; outputs; and approach to monitoring. There does not appear to have been any evidenced engagement with education, training and employment support providers based within the district. This will be critical in the delivery of the wider benefits. 10.2 Concerns have been expressed to Horsham District over the implications on rural landbased enterprises during both construction and operational phases, including for agricultural operations once the cable has been installed, i.e., whether it would be buried deep enough, and whether the width of the cable corridor could be justified. 10.3 The ES states that within the permanent easement land operations would be able to continue as normal. The Outline Code of Construction Practice (COCP) sets out how the construction methods to be deployed to ensure drainage patterns are interrupted as little as possible and that, where possible, trenches will be backfilled with onsite arising, with material returned in the order they were extracted. Consequently, to the best of HDC's	The **outline Skills & Employment Strategy (oSES)** **[APP-256]** submitted with the DCO Application was intentionally high-level and the Applicant was not in a position to document concrete commitments without further consultation with key skills and employment stakeholder organisations in Sussex. The first tranche of consultation took place between July and October 2023 and included meetings with Science, Technology, Engineering and Maths (STEM) Learning UK and Sussex Chamber of Commerce. The results of this consultation have fed into the second iteration of the **oSES** **[PEPD-037]**, submitted to the Examining Authority in January 2024. This latest version of the **oSES** **[PEPD-037]** includes seven additional key skills & employment stakeholder organisations, including Horsham District Council and the Institute of Technology Sussex. Meetings will be held with these stakeholders in early 2024. Tailored education, training and employment initiatives are already documented in Section 16, Page 13, which will be further developed during the subsequent consultation. In relation to outputs and monitoring, Paragraph 43 of the **oSES** **[PEPD-037]** highlights that, '*Further consultation will be held with the stakeholders listed in Table 4 forming the basis of commitments within a subsequent Skills and Employment Strategy which will include greater detail on timelines, monitoring and commitments*'.

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	understanding, impacts on land estate use and/or agricultural activities should be minimised. HDC would urge the Applicant to ensure this is the case through liaison with individual landowners. If the land became sterilised, this could have consequential impacts for the character of landscape, towards food security, as well as tackling climate change and securing ongoing financial stability and viability for the farm holding, should land use change be enforced. 10.4 The ES provides an adequate assessment of effects, except for the possible impact on tourist accommodation and cumulative effects. HDC accept the development would not have significant negative effects on the tourism industry for its own administrative area (as the Outline Public Rights of Way Management Plan sets out measures to manage and mitigate effects on PRoW network) but query if impact on the businesses located in Oakendene Industrial Estate have been sufficiently assessed. 10.5 It is noted access for routine checking and maintenance will be via manhole covers to the buried joint bays, which wherever possible will not be sited under PRoW or within Access Land. This should be extended to a commitment to this applying this also to the Local Green Spaces namely; Washington Recreation Ground, The Triangle, and Jockey's meadow. In the unlikely event that cable repairs and/or replacement is required, this will be implemented via the existing joint bays situated outside of these important green spaces and will not require new excavation. HDC would welcome a Commitment to the Applicant liaison group with Washington Parish to help address any matters arising from disruption to the recreation ground over the construction phase.	Following this next series of consultation meetings and the examination itself, the Applicant will produce a final Skills & Employment Strategy (SES) outlining key objectives, initiatives and activities, and details on timelines and monitoring. Section 6 paragraph 6.1.2 within the **Outline Soils Management Plan (SMP)** [APP- 226] secured via Requirement 22 of the **Draft Development Consent Order** **[APP-009]** states *'A pre-construction drainage programme will be necessary to divert drainage systems which will be intercepted by the works, in order to prevent waterlogging of the trench during working. This work is likely to involve the installation of one or more land drains complete with permeable fill installed parallel to intercept soil and groundwater before it reaches the trench. The Outline CoCP (Document Reference: 7.2) includes measures to ensure that the condition of existing drainage systems are appropriately maintained and restored*'. The assessment within **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** explores the impact on tourism and finds that overall, when all influencing factors are considered, the effect of the Proposed Development on the volume and value of tourism across Sussex is expected to be negligible across employment, gross value added, volume and value of the tourism economy, access to and enjoyment of onshore recreation activity, which is considered not significant in EIA terms. **In addition to this, the Applicant has included a number of commitments** specifically included to maximise the benefits of all project phases (construction, operation, and decommissioning) on the local economy and the local employment benefits: • C-34 RED will identify opportunities for companies based or operating in the region to access supply chain for the Proposed Development. • C-35 RED will work with local partners and seek to maximise the ability of local people to access employment. The Applicant will consider HDCs Representation with respect to extending commitment to Local Green Spaces namely; Washington Recreation Ground, The Triangle, and Jockey's meadow.
2.5.86	11. Historic and Water Environments Above ground Heritage Assets 26 11.1 HDC is satisfied all above ground heritage assets within Horsham District have been identified in the document Category 6: Environmental Statement Volume 4, Appendix 25.1: Gazetteer of onshore heritage assets. 11.2 HDC considers there has been an appropriate consideration of impact to designated and non-designated heritage assets. The Applicant has undertaken a comprehensive survey of assets and the impact of the development.	The Applicant welcomes Horsham District Councils (HDC's) acknowledgement that all above ground heritage assets within Horsham District have been identified and that there has been appropriate consideration of impact to designated and non-designated heritage assets including a comprehensive survey of assets.
2.5.87	Impact along cable routing	The acknowledgement that there will be no lasting impact within the setting of the heritage assets is welcomed by the Applicant.

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	11.3 The cabling through Horsham District will be buried and no above ground cabling infrastructure will remain once the project is completed (except for manhole covers to the buried joint bays). There will be impact within the setting of several listed buildings as described in Volume 4, Appendix 25.7: Settings assessment scoping report. This impact will last the duration of the construction phase of the project. The impact of trenching, service roads and compounds, lighting, vehicular movement, other activity, and noise will have a harmful impact within the setting of various designated and nondesignated assets. However, this impact will be relatively short term and have no lasting impact within the setting of the heritage assets. 11.4 The making good of ground and restoration of hedgerows and other landscape features is essential in ensuring there are no long-term impacts once the construction phase is completed. The approach to mitigating construction impact is described in Category 7: Other Documents Outline Code of Construction Practice. Section 4.10 states the principles of reinstatement of land. This approach is agreeable. 11.5 Although there will be short term impact within the setting of the conservation area in Washington Village whilst the recreation ground is partially utilised during the construction phases, this impact will cease once this phase of the work is complete. HDC has no concern regarding above ground heritage in Washington village.	The Applicant welcomes Horsham District Council's support on the approach to the reinstatement of land.
2.5.88	The Oakendene substation 11.6 The Oakendene substation will be visible following completion of the project. The extent of potential visual impact is illustrated in Volume 3, Chapter 25: Historic environment – Figures (Part 4 of 5) This will have an impact within the setting of Oakendene Manor, a grade II listed building, through change within its setting.	The Applicant has no further comments on this matter at this time.
2.5.89	Oakendene Manor 11.7 The information contained in Category 6: Environmental Statement. Volume 4, Appendix 25.5: Oakendene parkland: historic landscape assessment describes the history of the house and its parkland. Section 6 describes the significance of the parkland setting in reinforcing the special interest of the listed building. The historic parkland is stated as being of low heritage significance. And makes a moderate contribution to the heritage significance of Oakendene Manor. HDC is satisfied this is an accurate conclusion. 11.8 The potential impacts of the proposed infrastructure are listed in section 7. The mitigation for these impacts have been included in the indicative landscape planting proposals. At this stage HDC considers that the impact will result in less than substantial harm through change within the setting of the listed building, Oakendene Manor. Mitigation for this impact is described in Category 7: Other Documents Outline Landscape and Ecology Management Plan; specifically, section 2. And Category 5: Reports Design and Access Statement; specifically, section 3.4. The principles and intentions of mitigating any harm within the setting of Oakendene Manor should be ensured through inclusion in the DCO.	11. 7 The Applicant welcomes HDC's Representation that the Oakendene historic parkland significance and assessment is accurate. 11.8 The design principles identified to reduce and minimise the impact on the setting of Oakendene Manor are secured in the **Design and Access Statement (DAS)** **[AS-003]** and the **Outline Landscape and Ecology Management Plan (LEMP)** **[APP-232]**. The detailed design of the onshore substation must be undertaken in accordance with these design principles and provided for approval of the planning authority as per the requirements of the **Draft Development Consent Order** **[PEPD-009]** including 8 (2) which states that the design for approval, "*must accord with the principles set out in the relevant part of the design and access statement*". Requirement 12 (3) also requires accordance with the DAS for provision of the landscaping details for the onshore substation. 11.9 The Applicant welcomes HDC's Representation regarding the provision to implement historic parkland style tree planting with Works No. 17 (**Draft Development Consent Order** **[PEPD-009]**), secured in the **Design and Access Statement (DAS)** **[AS-003]** and the

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Ref	Relevant representation comment	Applicant's response
	11.9 Welcomed is provision made in the proposed DCO Order Limits in Works No. 17 (see Onshore Works Plans (Document Reference: 2.2.2) to implement historic parkland style tree planting, to be confirmed at detailed design. 11.10 HDC confirms that, having reviewed the location of designated above-ground heritage assets within the vicinity of the development and evaluated the contribution that their settings make to the significance of the asset, the impact of the development, including the substation, on these would be less than substantial at the lower end of the scale of that category in all cases of the historic environment and individual heritage asserts.	**Outline Landscape and Ecology Management Plan (LEMP) [APP-232]** Requirements 8, 12 and 13 within the **Draft Development Consent Order [PEPD-009]**. 11.10 The Applicant welcomes HDC's Representation that the above-ground heritage asset assessment is accurate.
2.5.90	Water Environment 11.12 SuDs has been included into the overall design proposal and the likely impact arising would be minimal, subject to a robust Sustainable Drainage Strategy being required to ensure existing greenfield run-off rate is maintained and the impacts in the locality from surface water are controlled. WSCC is the LLFA incorporating Horsham District.	The outline drainage strategy presented as set out within the **Outline Operational Drainage Plan [APP-223]** has been designed to maintain greenfield run-off rates and address surface water run-on. The Operational Drainage Plan will accord with the **Outline Operational Drainage Plan [APP-223]** secured via draft DCO requirement 17. The response from the Applicant to comment 2.5.8 also covers this point in more detail.
2.5.91	11.13 HDC shares and supports the overarching concerns raised on water environment impacts to the design for the operational drainage at the Oakendene Substation works and that the current FRA and design proposals for the Oakendene Substation do not truly reflect the winter flooding that occurs at this location, and as identified as Principal Issues of Disagreement by WSCC in its capacity as responsible LLFA.	The Applicant considers that additional winter flooding information identified by West Sussex County Council (WSCC) in their Representation can be factored into the detailed drainage design. The outline drainage strategy presented within the **Outline Operational Drainage Plan [APP-223]** is based on several conservative assumptions (regarding the maximum design parameters for the substation, impermeability and climate change allowance).Therefore, there is deemed to be sufficient flexibility within the current outline drainage plan such that it can be revised and adapted at the detailed drainage design phase to address any concerns regarding winter flooding and associated loss of basin storage. As stated in Paragraph 6.5.6 of **Appendix 26.2: Flood Risk Assessment (FRA), Volume 4** of the ES **[APP-216]**, final design and sizing of drainage mitigation measures will be determined at the detailed drainage design stage in liaison with WSCC (as Local Lead Flood Authority (LLFA)).
2.5.92	11.14 It is necessary to be confident that the operational drainage is fit for purpose, due to its multi-functional purpose as associated biodiversity habitat (wet woodland), and the feasibility of delivering this, given potential attenuation basin design requirements (cross-section, depth and slope profile) and the implications to requested refinement and fixing of design parameters (developable area, building heights due to potential concrete base and other flood prevention measures) with respect to the development of the substation site.	The need to be sure that the operational drainage is fit for purpose is noted. As raised in the above response, there is sufficient flexibility within the current strategy to accommodate any concerns with regard to the implication of winter flooding issues at the detailed drainage design stage.
2.5.93	12. Concluding remarks on Horsham District Council's Relevant Representation 12.1 HDC has identified its substantive areas of concerns in the preceding paragraphs of this Relevant Representation. HDC has also identified wide-ranging concerns about the draft DCO. These will be shared with the Applicant in due course and will be set out in the Council's Local Impact Report. 12.2 HDC looks forward to liaising with the Applicant on the draft DCO and proposed Section 106. It should be noted that the Council may wish to be party to legal agreements to secure mitigation for any impacts in Horsham District.	The Applicant has no further comments on this matter at this time.

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Table 2-6 Applicant's Response to Mole Valley District Council

Ref	Relevant representation comment	Applicant's response
Introduction		
2.6.1	Mole Valley District Council (MVDC, or 'the Council') acknowledges the Secretary of State's decision (7 September 2023) to accept for examination the application for the Rampion 2 Offshore Wind Farm (Ref: EN010117), made by Rampion Extension Development Limited (RED, 'the Applicant') for a Development Consent Order (DCO). The Council requests that it is registered as an Interested Party (IP) for this process. 1.2 This Relevant Representation ('Representation') sets out a summary of the Council's views on the submitted application. 2.0 Position and Comments 2.1 The Council is supportive of innovative and sustainable schemes that contribute to the energy production for the region and limit/avoid environmental impact. As such, while MVDC is not raising any material objections, and recognises the environmental benefits of the project, it is keen to ensure that these benefits are balanced against any adverse impacts of the construction and operation of the proposed wind farm. To address this important matter the following points will need to be suitably explored and any issues addressed through the examination process.	The Applicant welcomes MVDC Representation and that MVDC is not raising any material objections to the proposals. The acknowledgement that Proposed Development will contribute to sustainable energy production is welcomed by the Applicant. The Proposed Development will help meet the urgent need for new renewable energy infrastructure in the UK and supporting the achievement of the UK Government's climate change commitments and carbon reduction objectives. The Proposed Development type is recognised as being a critical national priority in the National Policy Statement (NPS) EN-1 (November 2023) and NPS EN-3 (November 2023) (Department for Energy Security and Net Zero, 2023a; 2023b), for which there is an urgent need to deliver. The Applicant has provided individual responses to the specific remaining concerns raised below.
Seascape, Landscape and Visual Impact Assessment		
2.6.2	The Seascape, Landscape and Visual Impact Assessment (SLVIA) (APP-056), needs to be properly scrutinised to ensure that all of the correct viewpoint locations have been included in the assessment of 'out to sea' visual impacts, including the size and layout of the offshore wind turbines. Any additional viewpoints should be identified, where necessary, and additional assessment carried out. Any cumulative visual impacts with Rampion 1 should be considered within this context.	Detailed consultations were undertaken on the viewpoints, which brought forward many suggestions from stakeholders regarding the inclusion of certain viewpoint locations for assessment. In total, 54 viewpoints (Table 15-14 of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**) were agreed and included in the seascape, landscape and visual impact assessment (SLVIA), which provide a wealth of representative locations from which to understand the likely significant effects of the Proposed Development. Details of the viewpoint selection is explained in Section 15.3 of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**. Cumulative SLVIA effects of the Proposed Development with other wind farm projects have been scoped out as described in Table 15-10 of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**, in agreement with The Planning Inspectorate (PINS ID: 4.12.4). Rampion 1 is considered as part of the baseline conditions in **Section 15.6** and impact assessments in Section 15.10 of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**.
Cabling and construction phase		
2.6.3	While the majority of the development is offshore, the cabling and construction phase will be onshore and any adverse impacts and mitigation on ecological receptors, including key species and habitats need to be scrutinised. It is noted that the chosen cabling route has been chosen to try and avoid both natural and historic impacts (APP-193, APP-063, APP-180 and APP-232). However, the Council's view that more detail regarding how biodiversity net gains will be achieved and the type of ecological enhancements that will be delivered is needed. There could be a number of opportunities outside of the cabling route and offshore development area that should be explored.	Biodiversity units provided off-site, calculated via the Statutory Biodiversity Metric, will be provided in line with UK Government (Department for Environment, Food and Rural Affairs (Defra), 2024) guidance and be registered with Natural England. In this way, it will be no different to those development projects delivering mandatory biodiversity net gain (BNG) via the Environment Act 2021. Ensuring that all steps of the guidance are followed provides comfort that appropriate steps will be taken to ensure suitable habitat creation and enhancement work is backed up by robust management and monitoring to deliver the necessary biodiversity units. It should be noted that when discussing provision of off-site biodiversity units that they could be delivered within the proposed DCO Order Limits should suitable arrangements with landowners be made during the detailed design phase.

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Ref	Relevant representation comment	Applicant's response
		The types of biodiversity units to be purchased will reflect the needs of the Proposed Development (e.g. ensure that the trading rules within the metric are met) thereby delivering habitats known to be present and functioning within the locality. Further information on BNG is provided in **Appendix 22.15: Biodiversity Gain Information, Volume 4** of the ES **[APP-193]** and is secured by Requirement 14 of the **Draft Development Consent Order [PEPD-009]**
Impacts on Tourism		
2.6.4	While the public perception of renewable and sustainable infrastructure is changing, visual changes to onshore and offshore landscapes can influence tourism habits and visitor economies, thereby influencing visitor numbers and socio-economic return. The Environmental Statement - Volume 2: Chapter 17 - Socioeconomics (APP-058) does not currently appear to explore the impacts/benefits on tourism to the extent that would be expected and should be further considered by the ExA and additional information requested from RED as necessary.	The assessment of the impact on the volume and value of tourism detailed in Sections 17.9, 17.10 and 17.11 of **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** considered the changing public perceptions of offshore wind as evidenced by the UK Governments Public Attitudes Tracker. The assessment within **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** explores the impact on tourism and finds that overall, when all influencing factors are considered, the effect of the Proposed Development on the volume and value of tourism across Sussex is expected to be negligible. While there may be some people with negative perceptions of offshore wind farms who may be deterred from visiting, these are likely to be small in number and could be offset by those who are more likely to visit the area due to the development of offshore wind. For example, those visiting the existing Rampion visitor centre or those going on boat trips to the offshore infrastructure of Rampion 2.
Conclusion		
2.6.5	The Council does not principally object to the Application but considers it prudent for visual, ecological and socioeconomic impacts to be properly explored and scrutinised during the examination to ensure the best outcomes of the scheme.	Discussed in the points above, the Applicant has no further comments on this matter at this time.

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Table 2-7 Applicant's Response to Adur District Council

Ref	Relevant representation comment	Applicant's response
General		
2.7.1	These are officer level comments on behalf of Adur District Council. Adur District Council declared a climate emergency in July 2019. As part of this declaration, the Council has made a commitment to work towards being a carbon neutral council by 2030 and to be a net zero carbon district by 2045. The Council also acknowledges national targets set for delivering offshore wind, and for carbon reduction, and notes the important role offshore wind power can play in contributing to these. As such, the Council supports the increased provision of green energy that would be delivered by Rampion 2.	The acknowledgement that Proposed Development will contribute to provision of green energy is welcomed by the Applicant. The Proposed Development will help meet the urgent need for new renewable energy infrastructure in the UK and supporting the achievement of the UK Government's climate change commitments and carbon reduction objectives. The Proposed Development type is recognised as being a critical national priority in the revised NPS EN-1 (Department for Energy Security and Net Zero (DESNZ), 2023a) and NPS EN-3 (DESNZ, 2023b), which came into force in January 2024 and are considered to be relevant to the determination of the DCO Application. This additional generating capacity will contribute towards meeting the urgent need for new energy infrastructure in the UK, provide enhanced energy security, support the economic priorities of the UK Government and, critically, make an important contribution to decarbonisation of the UK economy. The Proposed Development will contribute materially towards meeting the urgent national need for renewable electricity, significantly reducing carbon emissions from energy. The assessment set out in **Chapter 29: Climate change, Volume 2** of the ES **[APP-070]** concludes the Proposed Development has a lifetime greenhouse gas (GHG) emissions saving of 35,901 kilotonne carbon dioxide equivalent ($ktCO_2e$). The Proposed Development will continue to offset greenhouse gas (GHG) emissions until 2050, and therefore make a positive contribution the UK Government target to reach net zero emissions in 2050.
2.7.2	However these positive aspects must be balanced against the need to take wider matters into account. Whilst it is recognised that larger turbines generate renewable electricity more efficiently and that there must be a trade-off between aesthetic impact and renewable energy production we do have some concerns about the visual impact of the turbines. Any assessment of visual impact should ensure that the coastline of Adur District is adequately addressed, given its important role as a recreational resource for residents and visitors, and heritage assets.	The likely significant environmental effects of the Proposed Development have been assessed in the Environmental Statement (ES). Wherever practicable, likely adverse effects have been avoided or minimised through embedded environmental measures in the design of the Proposed Development, taking into account the findings of the ES, consultation with stakeholders and national and local policy requirements. **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** has identified significant seascape, landscape and visual effects for areas of the South Downs National Park Authority (SDNP), West Sussex, East Sussex, and the City of Brighton & Hove. A number of measures are embedded as part of the Rampion 2 design to avoid, minimise or reduce any significant environmental effects on seascape, landscape and visual receptors, as far as possible for example the Windfarm Separation Zones within the **Offshore Works Plans** **[PEPD-004]**. Although it is acknowledged that there are some significant effects on views and perceived special quality of the Chichester Harbour Area of Outstanding Natural Beauty (CHAONB) designation, no effects are of such magnitude or significant enough, on their own or cumulatively to compromise the statutory purposes of the designation. The likely significant onshore landscape and visual impacts (**Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**) linked to the Proposed Development are limited to the construction phase, and early in the operation and maintenance phase, and impacts will be temporary. Embedded measures aim to minimise effects on the special qualities of the SDNP through careful design consideration and planning in respect of the construction process and activity, taking account of relevant policy and guidance. **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059**] has identified a number of significant effects on the setting of designated assets in the construction phase along the onshore cable corridor. These effects will be temporary. There is also potential to encounter archaeological remains as outlined in **Chapter 25: Historic environment, Volume 2** of the ES **[APP-066]**. In line with the requirements of National Policy Statement (NPS) EN-1 (DECC, 2011a), archaeology at risk of loss or disturbance would be recorded before any loss occurs. This recording would be provided for in a Written Scheme of Investigation (WSI) (site-

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Ref	Relevant representation comment	Applicant's response
		specific, as described in the **Outline Onshore Written Scheme of Investigation (WSI)** **[APP-231]**) which is secured through Requirement 19 of the **Draft Development Consent Order** **[PEPD-009]**. **Chapter 17: Socio-economics, Volume 2** of the ES **[APP058]** identifies some significant effects on recreational users of a very limited number of public rights of way (PRoWs) and on two inshore and offshore receptors (recreational fishing and scuba diving) in the construction phase. These effects will be temporary and can be moderated through the implementation of environmental measures such as the **Outline Public Rights of Way Management Plan** **[APP-230]** secured via Requirement 20 within the **Draft Development Consent Order** **[PEPD-009]** and the **Outline Diver Communication Plan** **[APP-242]** secured in Condition 11(1)(h) of the dMLs (Schedules 11 and 12 of the **Draft Development Consent Order** **[PEPD-009]**. The wider benefits of Rampion 2 and the need for offshore wind energy must be weighed against the adverse effects that have been identified as well as any local issues and concerns. This balancing should also take into account national and international policies and obligations that seek to tackle climate change and achieve net zero carbon emissions in 2050.
2.7.3	The Council is also concerned that any adverse impacts to biodiversity are minimised, and an overall net gain for biodiversity is delivered.	The design of the Proposed Development and then the development of measures to mitigate and minimise effects, followed by identification of enhancements and delivery of Biodiversity Net Gain (BNG) have followed the mitigation hierarchy expected through planning policy as outlined in **Appendix 22.15 Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]**. The mitigation for individual ecological features / impacts will be adequately secured. The **Draft Development Consent Order** **[PEPD-009]** has Requirements 12, 13 and 14 securing mitigation, compensation and BNG. • Requirement 12 ensures that a Landscape and Ecological Management Plan and a Code of Construction Practice are provided for agreement with the relevant planning authority and Natural England; • Requirement 13 ensures that the Landscape and Ecological Management Plan is delivered as agreed; and • Requirement 14 secures the agreement and implementation of a BNG strategy. Individual commitments (as shown in the **Commitments Register** **[APP-254]** provided at Deadline 1 submission) also add further impetus to deliver successful restoration. This includes commitment C-103 that allows for a time limit for habitat restoration across the majority of the construction area (excluding temporary construction compounds, cable joint bays the landfall and the onshore substation location), whilst commitment C-115 minimises habitat loss of hedgerows and tree lines and proposes ways in which the reinstatement can take place. Commitment C-199 provides for the long-term management and monitoring of reinstated habitats.
2.7.4	The Council considers that benefits arising from the Rampion scheme should be distributed throughout those communities impacted by the schemes, particularly coastal communities and areas experiencing deprivation. The Council would welcome the opportunity to discuss how this can be supported, in more detail. The Council wishes to highlight the opportunities that could arise from facilitating direct links between energy generated by the Rampion schemes and the green energy technologies emerging along the south coast. Adur District Council is keen to explore opportunities to support green energy hub(s) within the district. Although there are no physical works proposed within Adur, we understand that other local authorities and organisations have raised concerns about potential	Community benefits are not a legal or DCO requirement and are quite distinct from the consenting process, a point reiterated in the Government (Department for Energy Security and Net Zero) response to the consultation on Community Benefits for Electricity Transmission Network Infrastructure (Dec 2023), which stated: *"The proposals on community benefits for electricity transmission network infrastructure discussed within this document will remain separate to the planning process. It will not be a material consideration in planning decisions, and not secured through those decisions."* That said, Rampion 2 will be a permanent neighbour in the Sussex community and the Applicant intends to develop and implement a community benefits package of proposals. In the second half of 2024, the Applicant will therefore be consulting key stakeholders and local communities on how a community benefit package could

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Ref	Relevant representation comment	Applicant's response
	impacts of construction, operation, and decommissioning (both offshore and onshore). As a neighbouring authority, we seek to ensure that these matters are adequately considered and mitigated as appropriate.	best support Sussex communities. The final package may include a range of initiatives to benefit business, education and residential communities. The Applicant welcomes green energy technologies along the coast but in terms of direct links from energy generated from the wind farm, The Applicant must emphasise that the Rampion 2 scheme is designed with a grid connection agreement in place for 100% of the power generation. While the local population density and associated electricity demand means much of the power generated will be consumed locally through the existing distribution network, it is not possible to feed individual businesses or green energy hubs directly from the Rampion 2 wind farm.

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Table 2-8 Applicant's Response to Brighton & Hove City Council

Ref	Relevant representation comment	Applicant's response
Principle of the Development		
2.8.1	BHCC acknowledges the benefit of the scheme in terms of providing renewable energy to address the UK's impact on climate change. This accords with the national target of net zero carbon by 2050, but also the Council's own target of becoming carbon neutral by 2030. While the energy would go into the national grid rather than directly to local use within Sussex, we acknowledge the overall benefit the scheme would deliver and are supportive of the increased provision of green energy.	The Proposed Development will contribute materially towards meeting the urgent national need for renewable electricity, significantly reducing carbon emissions from energy.
Seascape, Landscape and Visual Impact Assessment		
2.8.2	We note and support the conclusion that the impact of the scheme on the Brighton and Hove seafront would be 'major/moderate', particularly noting the high sensitivity to change. We are pleased that this impact has reduced since the preliminary (PEIR) assessment through revisions to the layout. However, we would highlight our concerns over the remaining impact, particularly noting the seafront is visited by millions of visitors each year and enjoyed year-round by locals. It is at the core of the City and its character. The capacity for the character of the view to be 'changed by seafront and beach activity' is noted in the SLVIA (p257), and we would certainly characterise this as a positive change. The beachfront activity is part of what attracts people to live and visit the city and increases the potential for the visual impact to be experienced more widely. Periods of reduced activity are also potentially subject to greater visual impact as those using the seafront expect more tranquil, less busy views. For this reason, we raise concerns over the impact of the scheme on the Brighton and Hove seafront. We also note the 'major' impact on Rottingdean highlighted in relation to viewpoint. Although this viewpoint is within the South Downs National Park, it is just 75m north and 100m west of the Brighton & Hove City boundary so the impact would be similar to that on areas within our jurisdiction (noting that they are outside of our jurisdiction only in relation to planning matters). The impact on this part of our coastline is also of concern, given the lack of mitigation set out in the submission.	The Applicant welcomes feedback on the revisions to the spatial extent of the proposed DCO Order Limits that have contributed to reducing the magnitude of change on views from Brighton. The Applicant notes Brighton and Hove City Council's concerns over the residual significant impact on views from Brighton Seafront and the Rottingdean area, close to Brighton. The sensitivity and importance of the sea views from Brighton seafront and the contribution of the seascape to the city character and sensation of space within Brighton is recognised and assessed accordingly, as being of high sensitivity, in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the Environmental Statement (ES) **[APP-056]** and **Appendix 15.4: Viewpoint assessment, Volume 4** of the ES **[APP-160]** (Viewpoint 8). The Applicant also notes that the effect remains 'major' in environmental impact assessment (EIA) terms as assessed in **Appendix 15.4: Viewpoint assessment, Volume 4** of the ES **[APP-160]** (noting an error transposing this detailed assessment into the summary Table 15-36 in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**). The Applicant notes that the visual assessment for Rottingdean (Viewpoint 7) is high sensitivity, major-moderate magnitude of change and significant (major) effect which is consistent with the effect on Brighton seafront. Although the ES assessment finds a significant visual effect on views from Brighton seafront and Rottingdean, changes to the design of the Proposed Development have contributed to reducing the magnitude of change on views from Brighton seafront (Viewpoint 8) and Rottingdean (Viewpoint 7) from 'High' magnitude assessed in Rampion 2's first Statutory Consultation exercise running from 14 July 2021 to 16 September 2021, Preliminary Environmental Information Report (PEIR), to 'Medium-high' magnitude assessed in the ES. The key factors that contribute to this reduction in magnitude of change, which provide mitigation are: • Increased distance away from these receptors. The proposed DCO Order Limits (offshore array area) is located 18.4km from Brighton Seafront (Viewpoint 8) compared to 13.8km from the PEIR Assessment Boundary. Similarly, the proposed DCO Order Limits (offshore array area) is located 18.7km from Rottingdean (Viewpoint 7) compared to 14.0km from the PEIR Assessment Boundary. The vertical height/apparent scale of the Rampion 2 wind turbine generators (WTGs) reduced in views from these receptors at this increased distance offshore. • Reduced lateral spread of WTGs in the horizontal field of view (HFoV). The spatial extent of the proposed DCO Order Limits (offshore array area) has been reduced both to the

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Ref	Relevant representation comment	Applicant's response
		east and west of Rampion 1 and this reduction is evident in views from Brighton and Rottingdean. The eastern (Zone 6) array is viewed mainly behind the operational Rampion 1 WTGs, with limited additional eastern spread. Although the Rampion 2 WTGs will be viewed as being larger in scale than the operational Rampion 1 WTGS, there is a better balance in apparent scale of the Rampion 1 and Rampion 2 WTGs, with stark scale comparisons minimised by siting Rampion 2 WTGs further offshore, introducing wind farm separation zones and avoiding the seascape immediately to the east of Rampion 1. The magnitude of change is also moderated by the presence of Rampion 1 in the baseline which is now an established part of the seascape setting / sea views from Brighton seafront. Rampion 2 will introduce further WTG elements with a similar form to those that are already characteristic in the views from these areas of Brighton. These factors resulted directly from the design changes made to the design of the Proposed Development between PEIR and ES through the design principles described in Section 15.7 **of Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**. The Applicant has also produced and submitted a **SLVIA Maximum Design Scenario and Visual Design Principles Clarification Note (Document Reference 8.35)** (submitted at Deadline 1), which provides further commentary on these seascape, landscape and visual impact assessment (SLVIA) specific design principles. Opportunities to reduce effects further are limited due to the technical and economic requirements of the Proposed Development associated with generating renewable energy as well as other environmental factors.
2.8.3	Impact on Heritage Features We query the conclusion that the impact of the offshore works on all heritage features along the coastline, including within Brighton & Hove would be 'not significant', regardless of the magnitude of change and their sensitivity to it. For Brighton & Hove, we do not agree that the impact on the numerous heritage features along our coastline would be 'not significant'. We acknowledge the distance to the turbines but would highlight the views shown in the SLVIA (viewpoints 7 and 8) which make it clear that the impact is greater than 'not significant'. The existing turbines have already visibly changed the setting of these historic features, and as is apparent in these viewpoints, the increased number and height would increase this impact.	The Applicant refers Brighton & Hove City Council to Section 26.8 of **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**, which outlines the methodology for assessment of effects, in particular the classification of effects which is judged on the relationship of the magnitude of impact to the assessed heritage significance of an asset. Where relevant, the assessment of heritage assets in **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020**] takes the representative views in seascape, landscape and visual impact assessment (SLVIA) Viewpoint 7 and Viewpoint 8 into consideration, alongside all other baseline information provided in **Appendix 25.8: Onshore heritage asset baseline report, Volume 4** of the ES **[APP-214]**. The Applicant invites Brighton & Hove City Council to clarify the assessment outcome of which specific heritage assets are being disputed.
2.8.4	Socio-Economic Impact As we did at the PEIR stage, we note the lack of socio-economic benefit the scheme would deliver to Brighton & Hove, despite the city bearing the long-term brunt of the visual impact on our coastline and its heritage features. We query the applicant's justification for not using ex-ante (post-development) windfarm survey data which they state is because responses are 'subject to bias' depending on people's feelings about windfarms. This justification could relate to any development. It is not, therefore, considered sound reasoning for not undertaking, or excluding survey data from people living and visiting Brighton & Hove – i.e. people experiencing Rampion 1.	The main aim of the tourism assessment is to assess the impact of the wind farm on the volume and value of tourism (driven by the number of people who visit the area). There are a number of well-established reasons why pre-development (ex-ante) surveys have a greater risk of bias, which could result in an overestimate of the impact on visitor numbers including: • Responses to hypothetical scenarios may not accurately reflect actual behaviour. People's opinions or intentions can change over time, especially when

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Ref	Relevant representation comment	Applicant's response
		confronted with the reality of the situation; • Respondents may not have a clear or accurate understanding of what the offshore wind farm will look like, leading to responses based on misconceptions; • Reactions might be driven by their emotional or kneejerk response to change (or their feelings about windfarms) rather than considered opinions or their true intentions; and • There is a risk that the survey sample could be skewed towards people who have strong feelings about wind farms (positive or negative) and are therefore more likely to be willing to take part in a survey. This would mean the sample is not representative of the broader population of visitors. Brighton & Hove City Council appears to suggest that a post-development survey of visitors and their views of Rampion 1 should have been undertaken. However, it is not clear how this would help to understand the impact on visitor numbers. The only way to identify and survey visitors to an area is face-to-face, and on location. Therefore, by definition, the respondents will be people who do not feel strongly enough about Rampion 1 for it to have deterred them from visiting the area. There would have been no way of identifying the visitors who have been deterred from visiting Brighton due to Rampion 1. Therefore, the sample would be skewed towards people who have positive or indifferent feelings towards wind farms. A more robust method for assessing the impact on visitor numbers is to use longitudinal data on the number of visitors to Brighton, or the value of their expenditure, before and after the construction of Rampion 1 and compare this to a benchmark (e.g. a regional or national average). This is already included in **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]**, paragraph 17.9.32 and Graphic 17-5. This shows that the total number of visits to Brighton remained broadly stable during the construction period of Rampion 1 (around 11 million) but declined in Great Britain as a whole. It also shows there was a sharp increase in visitor numbers in Brighton in the year after completion (2019) compared to a further fall in visitor numbers in Great Britain. Data after 2019 were not included because they were significantly affected by the COVID-19 pandemic which led to a large fall in visitor numbers in all areas. Therefore, based on the data available, Brighton has consistently outperformed the national average during the construction and post-commissioning phases, suggesting there has been limited impact on visitors.
Outline Skills and Employment Strategy		
2.8.5	We welcome the Outline Skills and Employment Strategy and RED's recent engagement on this in a meeting with officers. However, it lacks any commitment to financial contributions to education or employment within Brighton & Hove. For our purposes it cannot therefore be considered mitigation and we can only conclude that the proposal would have no economic benefit for the city.	The **outline Skills & Employment Strategy (oSES)** **[APP-256]** submitted with the DCO Application was intentionally high-level and the Applicant was not in a position to document concrete commitments without further consultation with key skills & employment stakeholder organisations in Sussex. The first tranche of consultation took place between July and October 2023, the results of which have fed into the second iteration of the **oSES** **[PEPD-037]**, submitted to the Examining Authority in January 2024. This latest version of the **oSES** **[PEPD-037]** includes seven additional key skills & employment stakeholder organisations and following this series of consultation meetings and

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Ref	Relevant representation comment	Applicant's response
		the examination itself, the Applicant will produce a final Skills & Employment Strategy outlining key objectives and activities, which is likely to include details of education, training and employment objectives, initiatives and activities. The oSES is secured through Requirement 33 of the **Draft Development Consent Order** **[PEPD-009]**.
Conclusion		
2.8.6	BHCC notes the national benefits of the scheme in terms of the provision of renewable energy and the positive impact this will have on climate change. However, BHCC raises concerns over the visual impact of the scheme on our coastline, particularly its sensitive heritage features, and the lack of any economic or other benefits for the city, or contribution towards mitigating the visual impacts of the scheme, such as through financing schemes to improve/upgrade heritage features and the public realm along the city's coastline. On the basis of the above, BHCC raises a holding objection to the proposal.	The Applicant has no further comments at this time.

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Table 2-9 Applicant's Response to Waverley Borough Council

Ref	Relevant representation comment	Applicant's response
2.9.1	Waverley Borough Council has declared a climate emergency and supports the expansion of renewable energy in consultation with local communities. The Council has no further comments to make and does not wish to present evidence at the inquiry.	The Applicant welcomes Waverley Borough Council's consideration of the Rampion 2 proposals. Rampion 2 has undergone consultation with local communities and will make an important contribution to UK efforts in tackling climate change. The Proposed Development will contribute materially towards meeting the urgent national need for renewable electricity, significantly reducing carbon emissions from energy.

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Table 2-10 Applicant's Response to Worthing Borough Council

Ref	Relevant representation comment	Applicant's response
2.10.1	Worthing Borough Council Comments (officer level response) Worthing Borough Council declared a climate emergency in July 2019. As part of this declaration, the Council has made a commitment to work towards being a carbon neutral council by 2030 and to be net zero carbon by 2045. The Council also acknowledges national targets set for delivering offshore wind, and for carbon reduction, and the important role offshore wind power can play in contributing to these. As such, the Council supports the increased provision of green energy that would be delivered by Rampion 2.	The Applicant welcomes Worthing Borough Council's support that the Proposed Development will contribute to climate change mitigation. The Proposed Development will help meet the urgent need for new renewable energy infrastructure in the UK and supporting the achievement of the UK Government's climate change commitments and carbon reduction objectives. The Proposed Development type is recognised as being a critical national priority which there is an urgent need to deliver in the revised National Policy Statement (NPS) EN-1 (Department for Energy Security and Net Zero (DESNZ), 2023a) and NPS EN-3 (DESNZ, 2023b) published in November 2023, which took effect in January 2024, and is a relevant consideration in the decision-making process. The assessment set out in **Chapter 29: Climate change, Volume 2** of the ES **[APP-070]** concludes the Proposed Development has a lifetime greenhouse gas (GHG) emissions saving of 35,901ktCO_2e.
SLVIA		
2.10.2	However, these positive aspects must be balanced against the need to take wider matters into account. Whilst it is recognised that larger turbines generate renewable electricity more efficiently and that there must be a trade-off between aesthetic impact and renewable energy production there are some concerns about the visual impact of the turbines. Any assessment of visual impact should ensure that the coastline of Worthing Borough is adequately addressed, given its important role as a recreational resource for residents and visitors, and heritage assets including Worthing Pier.	The seascape and visual impacts of Rampion 2 wind turbine generators (WTGs) are assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** including the effects on Worthing Borough. The Applicant notes that significant effects on views experienced by people living, working, and visiting the coastline of Worthing Borough have been identified at representative viewpoints including Viewpoint 10 from Worthing sea front (**Figure 15.35 in Chapter 15: Seascape, landscape and visual impact assessment – Figures (Part 5 of 8), Volume 3** of the ES **[APP-092]**. The spatial extent of the Rampion 2 array area has been reduced and designed according to a set of SLVIA specific design principles (**Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES) **[APP-056]** which provide embedded environmental measures by reducing the magnitude of effects and minimising harm on the perceived seascape qualities and views. Opportunities to reduce effects through further design principles specific to West Sussex are limited by the technical, economic and functional requirements of the Project to produce renewable energy, as well as other environmental factors.
Biodiversity Net Gain		
2.10.3	The Council is also concerned that any adverse impacts to biodiversity are minimised, and an overall net gain for biodiversity is delivered. In particular the Council seeks assurance that any damage to the seabed arising from construction, cabling, operation or decommissioning works is appropriately restored and monitored in order to provide a stable seabed. Any disturbance should be minimised and mitigated appropriately. Benefits arising from the Rampion scheme should be distributed throughout those communities impacted by the schemes, particularly coastal communities and areas experiencing deprivation. The Council would welcome the opportunity to discuss how this can be supported, in more detail.	In relation to terrestrial ecology, Rampion 2 will deliver Biodiversity Net Gain as set out in **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES **[APP-193]**. BNG is secured by Requirement 14 of the **Draft Development Consent Order** **[PEPD-009]**. Impacts to the seabed arising from construction, cabling, operation and decommissioning works are assessed in **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-050]**. A range of environmental measures are embedded as part of the Proposed Development design to remove or reduce any significant environmental effects on benthic subtidal and intertidal ecology receptors, as far as possible. These measures are detailed in **Table 9-16** of **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-050]** and included in the **In Principle Sensitive Features Mitigation Plan** **[APP-239]** secured

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Ref	Relevant representation comment	Applicant's response
		in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **Draft Development Consent Order [PEPD-009]**). Following the implementation of the embedded environmental measures, no significant effects are predicted to occur.
Opportunities for Green Energy Hubs		
2.10.4	The Council wishes to highlight the opportunities that could arise from facilitating direct links between energy generated by the Rampion schemes and the green energy technologies emerging along the south coast. We are keen to explore opportunities to support green energy hub(s) within the borough. Although there are no physical works proposed within Worthing, we understand that other local authorities and organisations have raised concerns about potential impacts of construction, operation, and decommissioning (both offshore and onshore). As a neighbouring authority, we seek to ensure that these matters are adequately considered and mitigated as appropriate.	This is not a matter directly relevant to the DCO Application, however the Applicant is open to liaison with the developers of other green energy technologies and green energy hubs. Regarding potential impacts of construction, operation and maintenance and decommissioning – the concerns of neighbouring authorities are being addressed through these Relevant Representations, the process of Written Representations and the agreement of Statements of Common Ground and Local Impact Reports.

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3. Applicant's Response to Relevant Representations: Parish Councils and Members of Parliament

Table 3-1 Applicant's Response to Aldwick Parish Council [RR-007]

Ref	Relevant representation comment	Applicant's response
2.11.1	The Parish Council is an interested party in terms of representing residents' views: There are concerns over the scale of the proposals and visual impacts affecting Aldwick residents, and with the potential environmental impact of land based cabling/servicing required.	The Rampion 2 array area will have significant visual effects from Aldwick, and this is assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the Environmental Statement (ES) **[APP-056]**, with relevant viewpoints assessed near Aldwick being Viewpoint 12 from Bognor Regis (**Figure 15.37, Volume 3** of the ES) **[APP-092]** and Viewpoint 13 from Pagham (**Figure 15.38, Volume 3** of the ES) **[APP-092]**. The Design principles are described in Section 15.7 within **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** which sets out how the design of the Proposed Development provides embedded environmental measures addressing visual effects, in response to stakeholder comments, including a reduction in the spatial extent of the Rampion 2 array area, its spread and quantity of wind turbine generators (WTGs) within it. Opportunities to reduce effects through WTG height reduction are limited due to the technical and economic requirements associated with producing renewable energy as well as other environmental factors. The visual impacts associated with the onshore elements of the Proposed Development are assessed in **Appendix 18.4: Visual Assessment, Volume 4** of the ES **[APP-170]**. Due to its location, Aldwick is well outside the onshore landscape and visual impact assessment (LVIA) 2km study area as shown in **Figure 18.1, Volume 3** of the ES **[APP-098]**. Paragraph 18.4.6 within **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** states that the 2km LVIA Study Area (based on a detailed analysis of the Zone of Theoretical Visibility (ZTV)) defines a limit based on professional judgement beyond which it is considered unlikely for significant effects to arise.

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Table 3-2 Applicant's Response to Ashington Parish Council [RR-034]

Ref	Relevant representation comment	Applicant's response
2.12.1	Ashington Parish Council wish to register as an interested party. Rampion 2 Offshore Windfarm project - this matter was discussed at parish council meetings on Oct 5th and Nov 2nd 2023. With respect to the parish of Ashington, the council are concerned specifically about the impact that additional traffic will bring to an already busy local network.	Noted. Response to concerns regarding traffic are provided in **references 2.12.2 – 2.12.8** below.
2.12.2	The Washington roundabout, just south of Ashington village, already deals with a large volume of traffic with commuters and general traffic travelling north and south via the A24, and east and west via the A283, with traffic using this route to travel from the A272 down to the A27 on the coast.	The **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** defines that the A24 and A283 are designated construction traffic routes for the Proposed Development noting that these form part of West Sussex County Council's (WSCC's) Lorry Route Network These routes are therefore considered suitable for construction traffic. The likely significant transport effects of the construction phase of the Proposed Development have been assessed within **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]**, **Chapter 32: ES Addendum, Volume 2** (Document reference: 6.2.32) (submitted at Deadline 1) and in **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[APP-197]** which has been updated at the Deadline 1 submission. Based on the peak week sensitivity test used within **Chapter 32: ES Addendum, Volume 2** (Document reference: 6.2.32) (submitted at Deadline 1), a worst-case HGV flow will occur in week 87 of the construction phase where the Proposed Development will generate 44 Heavy Goods Vehicles (HGVs) and 91 Light Goods Vehicles (LGVs) per day at Receptor 17 (A283 east of the A24). In addition, the worst-case overall increase in traffic will occur in week 85 where there will be 43 HGV and 114 LGVs per day. Noting that construction traffic movements will occur across the core working hours of 07:00-19:00 each day (see paragraph 8.4.13 of the **Outline CTMP** **[PEPD-035a]**), this is the equivalent of approximately 3-4 HGVs per hour and 9-10 LGVs per hour. It is therefore not anticipated that this construction traffic will have a material impact on the operation of the Washington Roundabout. For the A24 in proximity to Ashington, **Chapter 32: ES Addendum, Volume 2** (Document reference: 6.2.32) (submitted at Deadline 1) shows a peak HGV week increase in traffic at Receptor 20 of 39 HGVs per day and 26 LGVs per day and a total construction traffic peak of 19 HGVs and 78 LGVs per day. During the HGV peak week, the average construction traffic flow will therefore be 3-4 HGVs per hour and 2-3 LGVs per day and during the total construction traffic peak the average construction traffic flow will be 1-2 HGVs per hour and 6-7 LGVs per hour. It is therefore concluded that construction traffic will not have a significant effect on the A24 as it passes through Ashington.
2.12.3	Increased traffic will encourage drivers to take alternative routes along the country lanes of Hole Street at Ashington to Water Lane at Wiston to reach the A283. These roads are unsuitable for heavy vehicles and any increased movement of traffic.	The **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** provides details of construction traffic routes for the Proposed Development. The strategy for Heavy Good Vehicle (HGV) traffic includes the use of strategic elements of the highway network (A27 and A23) as far as possible before routing onto the local highway network. Construction traffic routes that form part of the local highway network also use West Sussex County Councils (WSCC's) prescribed Lorry Route Network wherever possible. HGV access beyond these routes has been limited to three routes taking account of local constraints, access locations and embedded environmental measures that aim to limit the impacts during the construction phase of the Proposed Development. These HGV access routes are defined in Table 5-1 of the **Outline CTMP** **[PEPD-035a]** and consist of: • Route 1: A27-A284-A259-Ferry Road or Church Road; • Route 2: A27-A280-A24-A283-B2135-B2116; and • Route 3: A23-A272-Wineham Lane or A272-Kent Street or A272-A281.

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Ref	Relevant representation comment	Applicant's response
		Construction traffic will be required to adhere to prescribed routing in accordance with the **Outline CTMP** **[PEPD-035a]**. A Transport Coordination Officer (TCO) will be appointed by the Contractor and employed by the Applicant to implement the stage specific CTMP. The TCO will undertake monitoring as necessary to comply with the requirements of the stage specific CTMP and apply enforcement and corrective measures where appropriate.
2.12.4	Increased traffic will also encourage drivers to travel through Ashington village if the A24 is congested.	Five temporary construction compounds are included within the Proposed Development, one of which is located at Washington (Washington Compound). In response to feedback following the Second Statutory Consultation exercise (October – November 2022) the proposed temporary construction compound at Rock Common Quarry has been discounted and not taken forward as part of the Proposed Development (see Table 23-5 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**. **Figures 4.5a** to **4.5c, Volume 3** of the Environmental Statement (ES) **[APP-077]** show the five proposed onshore temporary construction compounds. **Figures 4.3a** to **4.3u, Volume 3** of the ES **[APP-076]** show the indicative onshore trenchless crossing compounds and trenchless crossing limits of deviation. The likely significant transport effects of the construction phase of the Proposed Development including temporary construction compounds and trenchless crossing compounds have been assessed within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**. As outlined in **reference 2.12.3** above, Heavy Goods Vehicles (HGVs) will be routed along strategic elements of the highway network as far as possible and with the implementation of embedded environmental measures (as described in the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]**), no significant transport effects have been identified in relation to identified sensitive receptors.
2.12.5	There is concern about the increase in HGV traffic and again the use of the local country lanes as cut through routes to access works.	**Chapter 19: Air quality, Volume 2** of the Environmental Statement (ES) **[APP-060]** presents an assessment of air quality effects from construction traffic associated with the Proposed Development. The assessment concluded that the Proposed Development will not result in significant air quality effects, as a result of increased traffic on the local road network. A range of environmental measures within the **Commitments Register** **[APP-254]** related to air quality (such as Commitment C-24 Which includes best practice air quality management measures to be applied as described in Institute of Air Quality Management (IAQM) (2016) guidance) are embedded as part of the Rampion 2 design to remove or reduce significant environmental effects (included within the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** and secured through Requirement 22 within the **draft Development Consent Order** **[PEPD-009]**).
2.12.6	There is concern about the possibility that one of the construction works compounds for the project may be sited locally, again creating additional traffic movements, particularly HGVs, in the locality.	Table 19-9 within **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** states that there will be no significant traffic travelling through the Storrington High Street Air Quality Management Area (AQMA) and that Annual Average Daily Traffic (AADT) along the Storrington High Street AQMA are below the Institute of Air Quality Management (IAQM) and EPUK 92017) screening criteria for road links in AQMA's, therefore potential effects are negligible. The Applicant responses to Washington Parish Council and MP Andrew Griffiths Relevant Representations are provided in **Table 2-28 and Table 2-29** respectively below.
2.12.7	Increased traffic will undoubtedly have an impact on the air quality for local residents, and	Noted. Response to concerns regarding traffic are provided in **references 2.12.2 – 2.12.8** below.
2.12.8	The local village of Storrington already has an Air Quality Management Area that has been in place since 2010, due to existing high traffic flow. Ashington Parish Council also supports the responses already submitted by Washington Parish Council and by the MP Andrew Griffiths.	The **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** defines that the A24 and A283 are designated construction traffic routes for the Proposed Development noting that these form part of West Sussex County Council's (WSCC's) Lorry Route Network These routes are therefore considered suitable for construction traffic. The likely significant transport effects of the construction phase of the Proposed Development have been assessed within **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]**, **Chapter 32: ES Addendum, Volume 2** (Document reference: 6.2.32) (submitted at Deadline 1) and in **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[APP-197]** which has been updated at the Deadline 1 submission. Based on the peak week

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Ref	Relevant representation comment	Applicant's response
		sensitivity test used within **Chapter 32: ES Addendum** (Document reference: 6.2.32) (submitted at Deadline 1), a worst-case HGV flow will occur in week 87 of the construction phase where the Proposed Development will generate 44 Heavy Goods Vehicles (HGVs) and 91 Light Goods Vehicles (LGVs) per day at Receptor 17 (A283 east of the A24). In addition, the worst-case overall increase in traffic will occur in week 85 where there will be 43 HGV and 114 LGVs per day. Noting that construction traffic movements will occur across the core working hours of 07:00-19:00 each day (see paragraph 8.4.13 of the **Outline CTMP [PEPD-035a]**), this is the equivalent of approximately 3-4 HGVs per hour and 9-10 LGVs per hour. It is therefore not anticipated that this construction traffic will have a material impact on the operation of the Washington Roundabout. For the A24 in proximity to Ashington, **Chapter 32: ES Addendum, Volume 2** (Document reference: 6.2.32) (submitted at Deadline 1) shows a peak HGV week increase in traffic at Receptor 20 of 39 HGVs per day and 26 LGVs per day and a total construction traffic peak of 19 HGVs and 78 LGVs per day. During the HGV peak week, the average construction traffic flow will therefore be 3-4 HGVs per hour and 2-3 LGVs per day and during the total construction traffic peak the average construction traffic flow will be 1-2 HGVs per hour and 6-7 LGVs per hour. It is therefore concluded that construction traffic will not have a significant effect on the A24 as it passes through Ashington.

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Table 3-3 Applicant's Response to Bognor Regis Town Council [RR-041]

Ref	Relevant representation comment	Applicant's response
2.13.1	The application is for an offshore wind farm with an area up to approximately 196km2 comprising up to 90 wind turbines off the coast of Bognor Regis. With the proposed development in such close proximity to Bognor Regis, it is acknowledged by elected Members of the Town Council that it would likely have a significant impact on the lives of residents and visitors to the Town. Therefore, Bognor Regis Town Council would like to register as an interested party to ensure that the Council continues to have a voice. Members of the Planning and Licensing Committee will review the application documents again at its meeting to be held on 31 October 2023 at which they will be invited to agree any further comments to be submitted in response to the examination.	**Chapter 17: Socio-economics, Volume 2** of the Environmental Statement (ES) **[APP-058]** details relevant studies and evidence from offshore wind farms in the UK which shows that there has been no evidence of overall negative impact on the tourism economy from the development of offshore wind farms in the UK. This evidence included analysis of tourism employment numbers for Rampion 1 which showed higher levels of tourism and employment across Sussex coastal seaside towns over the period in which Rampion 1 was operational compared to before Rampion 1 began construction. The assessment of the impact on the volume and value of tourism detailed in Sections 17.9, 17.10 and 17.11 of **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** considers the changing public perceptions of offshore wind as evidenced by the UK Governments Public Attitudes Tracker. The assessment explores the impact on tourism and finds that overall, when all influencing factors are considered, the effect of Rampion 2 on the volume and value of tourism across Sussex is expected to be negligible. While there may be some people with negative perceptions of offshore wind farms who may be deterred from visiting, these are likely to be small in number and could be offset by those who are more likely to visit the area due to the development of offshore wind (see paragraph 17.9.27 of **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]**. For example, those visiting the existing Rampion 1 visitor centre or those going on boat trips to the offshore infrastructure of Rampion 2. The Rampion 2 array area will have significant visual effects from Bognor Regis, and is assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**, with relevant viewpoints assessed being Viewpoint 12 from Bognor Regis (**Figure 15.37, Volume 3** of the ES) **[APP-092].** The Design principles are described in Section 15.7 within **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** which sets out how the design of the Proposed Development provides embedded environmental measures addressing visual effects, in response to stakeholder comments, including a reduction in the spatial extent of the Rampion 2 array area, its spread and quantity of wind turbine generators (WTGs) within it. Opportunities to reduce effects through WTG height reduction are limited due to the technical and economic requirements associated with producing renewable energy as well as other environmental factors.

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Table 3-4 Applicant's Response to Bolney Parish Council [RR-042]

Ref	Relevant representation comment	Applicant's response
2.14.1	For the amenity of neighbouring residential properties, the construction hours permitted for both the works on the underground cable route through the Parish from the Oakendene substation to the Bolney National Grid substation, and for the works at the Bolney substation, must be the same as those required by Mid Sussex District Council in all construction projects across the District. The hours of construction must be: Monday to Friday 0800 – 1800 hrs Saturdays 0900 – 1300 hrs No construction work on Sundays or Public Holidays;	The working hours are detailed in Section 4.4 of the **Outline Code of Construction Practice (CoCP) [PEPD-033]** which is secured through Requirement 22 of the **Draft Development Consent Order** (DCO) **[PEPD-009]** along with other activity specific requirements including continuous working for trenchless crossing (e.g. Horizontal Directional Drill (HDD)). These working hours will apply across the Proposed Development and are consistent across all local authority areas. The assessments in **Chapter 19: Air quality, Volume 2** of the Environmental Statement (ES) **[APP-060]** and **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]** are based on the core construction working hours of 07:00 to 19:00 Monday to Friday and 08:00 to 13:00 hours on Saturday. No significant effects have been identified in the assessments. The Applicant considers that on this basis the proposed working hours are acceptable.
2.14.2	The permitted construction route through the Parish for all construction vehicles - that is HGVs, large and small vans, construction workers and private vehicles – must be on the A23, A272 and Wineham Lane only. The use of the Broxmead Lane/A23 and Hickstead/A23 junctions must be prohibited for all vehicles. There must be no use by any vehicle of the roads in the centre of the village of Bolney or any of the narrow, rural minor roads in any circumstances including London Road, Bolney Chapel Road, Foxhole Lane, Jeremys Lane, Spronketts Lane and Cross Colwood Lane;	The **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]** provides details of construction traffic routes for the Proposed Development. The strategy for heavy goods vehicle (HGV) traffic includes the use of strategic elements of the highway network (A27 and A23) as far as possible before routing onto the local highway network. Construction traffic routes that form part of the local highway network also use West Sussex County Council's (WSCC's) prescribed Lorry Route Network wherever possible, which includes the A272. Wineham Lane will only be used to access the existing National Grid Bolney substation extension works and a very limited number of light goods vehicles (LGVs) required during construction of the onshore cable route. The Applicant can also confirm that none of the other routes listed by the Parish Council form part of permitted construction routes included within the **Outline CTMP [PEPD-035a]** which is secured through Requirement 24 of the **Draft Development Consent Order** (DCO) **[PEPD-009]**
2.14.3	Wheel washing and dust management is required in all construction areas; All reversing beepers on all construction vehicles must be replaced by 'white noise' beepers;	Section 5.3 of the **Outline Code of Construction Practice (CoCP) [PEPD-033]** details the practical measures and monitoring procedures that will be implemented to manage the impact of dust in construction areas. This includes implementing a wheel wash system with rumble grids to dislodge accumulated dust and mud, prior to leaving site, where reasonably practicable. Section 5.4.8 of the **Outline CoCP [PEPD033]** details the practical measures that will be implanted to manage the impact of noise generated during construction. This includes the avoidance of reversing, where practicable and the fitting of low noise reversing warnings to pertinent vehicles. Procedures and measures stated in the **Outline Code of Construction Practice (CoCP) [PEPD-033]** are secured through Requirement 22 of the **Draft Development Consent Order** (DCO) **[PEPD-009]**.
2.14.4	There must be no use of generators or lighting outside of construction hours; There must be no use of traffic lights on Wineham Lane nor on the A272 outside of construction hours.	Section 4.5 of the **Outline Code of Construction Practice (CoCP) [PEPD-033]** details the measures that will be implemented to manage the impact of construction

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Ref	Relevant representation comment	Applicant's response
		lighting, including considerate positioning and directing. Construction will be limited to core working hours outlined in Section 4.4 of the **Outline CoCP** **[PEPD-033]** to limit the need for artificial lighting. At specific locations where continuous working is required (such as trenchless crossings), or in poor light conditions, directional lighting will be used where necessary to ensure safety and security. The Applicant notes that working hours stated in Section 4 of **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** and as outlined in Section 4.4 of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** and as secured through Requirement 22 of the **Draft Development Consent Order** (DCO) **[PEPD-009]** have been updated in the **Outline Construction Traffic Management Plan** **[PEPD-035a]** for the Deadline 1 submission and will be updated in the **Outline Code of Construction Practice** **[PEPD-033]** for the next submission of this document. Section 5.4.8 of the **Outline CoCP** **[PEPD-033]** details the best practice measures that will be implanted to manage the impact of noise generated during construction. This includes ensuring plant and machinery is turned off when not use and applies to generators. Generators will be low-noise models with manufacturers' acoustic packs and silencers fitted, and located in a position that they are screened by site buildings and/or temporary acoustic screening. Whilst it is not anticipated that traffic signals will be required on Wineham Lane or the A272, any traffic measures will need to be agreed with West Sussex County Council (WSCC) as part of the design submission for the onshore Oakendene Substation and the existing National Grid Bolney substation extension. Should traffic signals be required (or any other form of traffic management) these will be applied in accordance with guidance and procedures contained in Section 14 of the Road Traffic Regulation Act 1984.

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Table 3-5 Applicant's Response Clapham Parish Council [RR-071]

Ref	Relevant representation comment	Applicant's response
2.15.1	Whilst Clapham Parish Council recognises the importance of wind farms as an alternative source of energy it concerns regarding the onshore route which will go through the South Downs National Park remain as set out as part of its consultation responses in December 2022 and March 2023. Rampion 2 is a Nationally Significant Infrastructure Project which will inevitably pose risks to wildlife, flora and fauna, and, whilst we rely on specialists to identify these to avoid irreparable harm, the Council is extremely concerned at the impacts given the scale of the project and the sensitive area through which it will pass, the area of Clapham and Patching, lying wholly within the South Downs National Park.	**Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement (ES) **[APP-063]** describes the effects on the terrestrial ecology features present. The mitigation hierarchy has been applied through the design of the Proposed Development so that efforts have been made to avoid ecological features, minimise levels of effect where avoidance is not possible (e.g. trenchless crossings), mitigate effects (e.g. through sensitive temporary lighting design) and compensate for residual effects. Although there will be short term effects on a number of ecological features, the approach to construction, the reinstatement of habitats and habitat creation (both at the onshore substation site and as part of biodiversity net gain delivery) will provide a positive legacy for terrestrial ecology in the medium to long term.
2.15.2	WSCC's March 2023 response to the consultation process specifically highlighted a 'notable verge' within the parishes of Clapham and neighbouring Patching; "Attention is drawn to a Notable Road Verge (NRV) (Nature-friendly road verges - West Sussex County Council) on the south side of the A280 (Long Furlong) in the vicinity of Long Furlong Lane. This road verge supports an outstanding range of butterflies. Twenty species of butterfly were recorded in August 2021, including two notable species, small blue and brown argus. It is noted that access would be required from the A280 (very close to this NRV) should AA-33 be used. Measures may be required to ensure that there is no potential for damage to the considerable wildlife interest of the verge. For example, construction traffic and materials must, on no account, be allowed onto the NRV". We also understand that there is currently no policy requirement for the project to leave wildlife in a better state then it was before the development but that Rampion has given an undertaking to do so as part of the project. We want to make sure that this happens as part of the DCO application and examination. We are aware that WSCC "has a significant concern over option LACR-01d taken forward by the Applicant.	No works are proposed on the Notable Road Verge (NRV) on the south of the A280. This road verge is outside of the proposed DCO Order Limits and therefore no activity on this NRV will be permitted by the grant of development consent. The Applicant has made a commitment to deliver Biodiversity Net Gain (BNG), quantified using the method developed by Natural England, for the onshore elements of the Proposed Development. This is secured through Requirement 14 of the **draft DCO [PEPD-009]**.
2.15.3	The archaeological sensitivity of this section of the route is exceptionally high. LACR-01d crosses an area of the South Downs which forms part of an incredibly rich and complex multi-period prehistoric landscape of national significance including scheduled Early Neolithic flint mining sites constituting the earliest evidence industrial activity in Britain". These concerns are also shared by the Parish Council, as previously reported. Clapham Parish Council opposes this application on the basis of the selected onshore option.	The assessment within **Chapter 25: Historic environment, Volume 2** of the Environmental Statement (ES) **[PEPD-020]** identifies a high potential for archaeological remains of high heritage significance within the onshore cable route which crosses the South Downs. Paragraphs 3.4.55 to 3.4.67 within **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** provides the details of the selection of the onshore cable route in this area. The **Planning Statement [APP-036]** outlines the position with regards the planning balance with regard to the benefits of the Proposed Development and the harm to heritage assets that is identified in **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**, as per paragraphs 4.7.66 and 5.4.10 of the **Planning Statement [APP-036]**. Commitments C-225 and C-79 in the **Commitments Register [APP-254]** (updated at the Deadline 1 submission) provide for mitigation through design and archaeological recording and are secured through Schedule 1, Part 3, Requirement 19 of **draft DCO [PEPD-009]**:

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Ref	Relevant representation comment	Applicant's response
		• C-225 Where previously unknown archaeological remains of high heritage significance are identified through surveys along the cable route, and where these locations have not been possible to avoid during earlier design stage, consideration will be made for engineering solutions (e.g. narrowing of the construction corridor, divert cable route within DCO Order Limits, re-siting stockpiles) to avoid impacts in the first instance. Where impacts are not avoidable, these will be minimised where possible through design solutions and an appropriate programme of mitigation will be undertaken to ensure preservation by record. Such measures will be reviewed in consultation with relevant stakeholders (WSCC Archaeologist and Historic England). An onshore outline WSI provides detail of appropriate methodologies to be implemented during the evaluation and mitigation stages of the archaeological works (as updated by the Applicant within the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** (submitted at the Procedural A Deadline); and • C-79 Archaeological and paleoenvironmental mitigation will entail an agreed programme of archaeological recording and dissemination to mitigate any significant adverse effects during construction. Provision will be made for appropriate curation/deposition of the site archive.

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Table 3-6 Applicant's Response to Clymping Parish Council [RR-075]

Ref	Relevant representation comment	Applicant's response
2.16.1	The impact that the installation will have on Clymping Village. Rampion 2 Offshore Windfarm Submission to Planning Inspectorate Clymping Parish Council November 2023 1. Clymping is a small rural parish of 690 hectares on the south coast to the west of Littlehampton. It is bisected roughly east to west by the A259 Littlehampton to Bognor Road. The other through routes in the parish are the B2233 and Church Lane going from their junctions with the A259 north-west to Yapton and northward to Ford and Arundel respectively. It faces considerable issues with coastal erosion threatening homes and livelihoods, housing development that will double the size of the village and traffic issues that lie behind a major upgrade of the A259 in the village. Rampion 2 will only add to the pressures on the community. When Rampion made the proposal to bring the cabling ashore at Climping beach, it was immediately clear that the village is likely to be disproportionately impacted by this development. It is likely to suffer severe disruption during the works to bring the power cables ashore and the onshore construction works. The visual impact of the turbines will affect the setting of this coastal community and the beach amenity.	Disruption has been minimised through the production of the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]**. Stage specific CTMPs (including a stage specific CTMP for the works at Climping Beach) are required to be submitted in accordance with Requirement 24 of the **Draft Development Consent Order [PEPD-009]** and will be produced by the appointed Contractor(s) following the grant of the DCO and prior to the relevant stage of construction. This will be produced in accordance with the **Outline CTMP [PEPD-035a]** for approval of the relevant highway authority, prior to the commencement of that stage of works. The likely significant transport effects of the construction phase of the Proposed Development including temporary construction compounds and trenchless crossing compounds have been assessed within **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]**. With the implementation of embedded environmental measures (as described in the **Outline CTMP [PEPD-035a]**), no significant transport effects have been identified in relation to identified sensitive receptors within Climping. The visual impacts of the wind turbines are assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**. The Design principles are described in Section 15.7 within **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** which sets out how the design of the Proposed Development provides embedded environmental measures addressing visual effects, in response to stakeholder comments, including a reduction in the spatial extent of the Rampion 2 array area, its spread and quantity of wind turbine generators (WTGs) within it. Opportunities to reduce effects through WTG height reduction are limited due to the technical and economic requirements associated with producing renewable energy as well as other environmental factors.
2.16.2	Clymping Parish Council has engaged in the consultation process for the proposed Rampion 2 Offshore Windfarm. Through the process we have registered the following principal concerns of Council, residents, and local businesses: • Once Operational: ▸ The visual impact of the turbines that will dominate the horizon viewed from Clymping beach, a popular community and visitor amenity. ▸ The post construction landscape in the Littlehampton to Middleton gap that is protected within the Arun Local Plan. • During Construction: Offshore impacts of marine trenching in an area currently the focus of rewilding as part of the Weald to Waves project and work to restore the kelp forest. ▸ Onshore construction disruption to village life and amenities The precise line of cable routing, areas trenched and those drilled horizontally.	The Applicant has no further comments on this matter at this time.

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2.16.3	The impact of onshore activities was the focus of our submission to the cable routing consultation in November 2022, which is attached for completeness. The proposed revised cable routing in Clymping was shown in areas 1a and 1b in pink (rather than that originally considered in blue). The solid route lines shows where the cable was to be trenched. The hatched sections are to be drilled horizontally, for instance under the beach. Our conclusions were as follows, as they related to this consultation. The Parish Council are strongly opposed to the compounds/operational sites as they affect the Church Green, to the north and west of the school and down Bread Lane. The reasons for this view are: • There will be considerable disruption in the village for 3 years 2026-29 • This will be compounded by the timing of the A259 developments and the Strategic housing site which are extremely likely to coincide with these proposals. • These include a new roundabout on the A259, works at Ferry Road junction, a new roundabout near the Oystercatcher. The proposed access AA01 will be opposite a new access to the 300 House development. • Locating a compound to the north and west of the school is unacceptable due to disruption, noise, dust in dry weather depending on the as yet undefined operations. This compound and the access down Bread Lane should be withdrawn given the proposals to move the cable east towards the river Arun for which access from Ferry Road is more suitable. • Residents have made it clear to the Parish Council that the operational area at Church Green is unacceptable given the sensitivity of the green for the village as an area of memorial and the setting of the Church and Church Hall. [Additionally, there has been bulb planting carried out over the last few years, which will also be impacted in the Spring of each of the years.] It should be removed given the proposed increase in operational flexibility south of Field Place and access to MR02. • There is no information or assessment of the drainage through the area south of Field Place. This is a serious omission given the critical importance of proposals for drainage from the Clymping strategic housing site through this area. It is the Parish Council's recommendation that site MR01 be used as the sole operational and construction compound south of A259 routing from Ferry Road.	The likely significant transport effects of the construction phase of the Proposed Development have been assessed in **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]**, **Chapter 32: ES Addendum** (Document reference: 6.2.32) (submitted at Deadline 1) and in **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[APP-197]** which has been updated at the Deadline 1 submission. Based upon the peak week sensitivity test included in **Chapter 32: ES Addendum, Volume 2** (Document reference: 6.2.32) (submitted at Deadline 1), receptor 5 (the A259 west of Wick) will experience the following traffic flow increases as a result of the Proposed Development: • A 5.3% increase in heavy goods vehicles (HGVs) during the peak HGV week across the construction programme (week 83), which is an increase of 50 HGVs and 57 light goods vehicles (LGVs) per day; and • A 4.5% increase in total traffic flow during the overall peak construction traffic week (week 72), which is an increase of 45 HGVs and 76 LGVs per day. All estimates of future baseline traffic flows used within used within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** (Document reference: 6.2.32) (submitted at Deadline 1) were based on TEMPro forecasts, which is a program developed by the Department for Transport providing traffic growth projections. These projections take account of national and local predicted growth in population, employment, housing (including sites allocated in the Local Plan) and is the industry standard approach to assessing future baseline traffic. Use of this methodology was agreed with West Sussex County Council (WSCC) and National Highways during consultation. Following the implementation of embedded environmental measures (such as the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** which is secured through Requirement 24 of the **Draft Development Consent Order** **[PEPD-009]**, no significant effects have been identified in relation to transport receptors within Climping. With respect to concerns raised around the operational area at Church Green, the previously proposed operational access along the road adjacent to St Mary's Church and Green is not proposed to be used for the Proposed Development and not included within the proposed DCO Order Limits (Section 6.8.1 (ID A1-39), **Appendix 6, Annex 2 Consultation Report** **[APP-029]**). The Bread Lane access (A-04) is defined in Table 23-25 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** as an operational access only for the onshore cable route. Paragraphs 23.4.21 and 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** describe the expected operation and maintenance phase activities which includes periodic testing of the onshore cable involving attendance by up to three light vehicles such as vans in a day at any one location a few times a year. Unscheduled maintenance or emergency repair visits for the onshore cable will typically involve a very small number of vehicles, typically light vans. In exceptional circumstances, equipment may be required to be replaced, then the use of an occasional HGV may be utilised, depending on the nature of the repair. (Paragraph 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**). There are a range of commitments that allow for the control of indirect effects from the land fall such as commitment C-76 (implementation of pollution prevention plans) to control risks of loss of pollutants (including dust) (see **Commitments Register** **[APP-254]**) within the **Outline CoCP** **[PEPD-033]** which is secured through Requirement 22 of the **Draft DCO** **[PEPD-009]**. Regarding the concerns around drainage and sea defences please find the responses under **reference 2.16.8 and 2.16.9** respectively below. The Applicant has no further comments on this matter at this time.

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Ref	Relevant representation comment	Applicant's response
	The Parish Council also strongly recommends that the proposals for operations and access from Church Green are withdrawn given the proposal to expand flexibility of operations south of Field Place with the inclusion of area AA01 shown on Plan 1b. • Routing from Ferry Road removes the impact on Bread Lane, a very popular walking route to the beach. • Any access from Ferry Road however, requires careful timing consideration, in conjunction with the proposed A259 works at Ferry Road/Climping Park. • All this work is critically dependant on the EA maintaining the bund sea defences for an extended period, rather than seeing "what they can do" annually. Emergency works were underway this weekend owing to overtopping and flooding due to storm damage to the bund. The project should be encouraged to contribute to the shingle moving costs annually whilst the works compound is in situ. • Access south of Field Place removes the impact on the Grade 1 listed heritage Church and the Church Green. ▸ Supporting these concerns, with specific reference to the cumulative effects of traffic flows on the A259 and the wider road network around Clymping, is the apparent lack of comprehension and understanding of the current traffic issues, and no detail or modelling of future traffic flows. Any traffic assessment must look at the cumulative effects and not just on the additional traffic movements from this project.	
2.16.4	5. The Examination Library of Documents deposited with the Planning Inspectorate as part of the submission are very extensive, detailed, and technical. A small Parish like us has to focus its detailed and constructive comments on those aspects of most concern to the community e.g.: • APP-007 Land Plans Onshore (2.1.2) • APP-009 Onshore Work Plans (2.2.2) • APP-012 Access, Rights of Way and Streets Plan (2.5) • APP-032 Statutory Nuisance statement (5.3) And specific parts of the Environmental Statement:	The Applicant has no further comments on this matter at this time.

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Ref	Relevant representation comment	Applicant's response
	• APP-059 Landscape and Visual Impact (6.2.18), • APP-060 Air Quality (6.2.19), • APP-062 Noise and vibration (6.2.21), • APP-064 Transport (6.2.23) • APP-224 Code of Construction Practice (7.2) APP-232 Landscape and Outline Ecology Management Plan	
2.16.5	We are pleased to note that our concerns have been heeded in relation to the removal of: • A works area adjacent to the north and west of St Mary's Primary school. • The use of Church Green and the access to the north and very close to St Mary's Church (Grade 1 listed building).	The Applicant welcomes acknowledgement that these concerns raised in consultation have informed Rampion 2 design work.
2.16.6	We object to the use of Crookthorn Lane, Brookpit Lane and Byway 197, Bread Lane as access to the work areas south of A259. The lanes are not suitable for heavy vehicles and provide the main access to the primary school. They are narrow with limited visibility and with grass edges that are easily damaged and prone to flooding. Recognising the limitations of the lanes at busy times the school operates a voluntary one system for parents driving their children to and from school. Bread Lane is the community's primary walking route to the beach and open countryside of the Littlehampton to Middleton gap in this area. Although unrestricted, it passes very close to the school and is not suitable for use by heavy vehicles. An alternative route south from Ferry Road would be far more suitable.	Access A-04 is served by Crookthorn Lane directly from the A259 and is for operational purposes only as shown on the **Onshore Works Plans Sheet 1** **[PEDP-005]**. Such access will be associated with scheduled and unscheduled maintenance with byway 197 used to access the onshore cable route from the public highway. Paragraphs 23.4.21 and 23.4.22 within **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]** describe the expected operational and maintenance phase activities which includes periodic testing of the cable through attendance by up to three light vehicles such as vans in a day at any one location. Unscheduled maintenance or emergency repair visits for the onshore cable will typically involve a very small number of vehicles, typically light vans. Infrequently, equipment may be required to be replaced, then the use of an occasional HGV may be utilised, depending on the nature of the repair.
2.16.7	8. We have several remaining concerns that should be considered carefully, and suitable planning conditions and mitigation applied: • The critical importance of the area south of Field Place (Works areas 10, 14, & 15) which is the sole drainage route from the strategic development of 300 homes on the western side of Church Lane and its SUDS scheme. At the end of October and into November the development site has suffered severe surface water flooding with run-off across Church Lane resulting in flooding of the grounds of Field Place. • The noise and lighting associated with the 24-hour drilling operations undertaken within work areas No 7 and No 8 to the south of A259. This will affect wildlife in the open countryside and	Regarding the concerns around drainage: The Applicant notes that drainage from the proposed Climping strategic housing site (Application Reference CM/48/21/RES/) will discharge via an existing culvert beneath Church Lane and to a drainage ditch that runs west to east between the temporary construction compound (to the south) and access track A-06 (to the north). A Cumulative Effects Assessment (CEA) was carried out as reported in Table 26-32 and Table 26-34 of **Chapter 26: Water environment, Volume 2** of the Environmental Statement (ES) **[APP-067]** for relevant developments within a delineated hydrological Zone of Influence (ZOI). The CEA concluded that there would be no likely significant cumulative effects arising from the strategic housing site (CM/48/21/RES/), in combination with Rampion 2. This is based on the implementation of good industry practice measures and other measures as outlined in the accompanying Flood Risk Assessment and Drainage Strategy Report (Bright Plan Civils, 2021) being implemented on the housing site. This is in combination with the implementation of embedded environmental measures as part of this Proposed Development which would mitigate any likely significant effects. As outlined in paragraph 5.10.9 of the **Outline Code of Construction Practice (CoCP)** **[PEPD033]**, a Construction Phase Drainage Plan will be developed by the contractor(s) to determine potential location specific risks in relation to the water environment and identify appropriate measures to avoid or reduce risk. The Construction Phase Drainage Plan is secured via Requirement 22 of the **Draft DCO** **[PEPD-009]**. In addition, the following embedded environmental measures (as outlined in Table 5-9 of the **Outline CoCP** **[PEPD-033]**) are of

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Ref	Relevant representation comment	Applicant's response
	residents close by will potentially suffer a significant loss of amenity if these works are insufficiently screened. • We are seeking assurance that the internal operations within the works compounds will be conditioned and enforced in such a way to minimise disturbance to residents. • We want to ensure that operational hours and times are adhered to and that suitable penalties are in place if they are not. • We want to ensure that traffic orders are in place to ensure no works vehicles use Horsemere Green Lane as a cut through. • It is essential that the open landscape is required to be returned to its original condition and agricultural quality.	relevance to ensure that the existing functionality and conveyance capacity of the drainage ditch is not compromised. These are secured via Requirement 22 of the **Draft DCO** **[PEPD-009]**: • C-28 (existing land drainage regime); • C-30 (erosion and sediment control); • C-73 (drainage design for surface water); • C-119 & C-175 (temporary construction areas and flood conveyance); • C-126 (temporary watercourse crossings); • C-130 (soil stockpile standoff distances); • C-179 (soil stockpiling and management of surface water); • C-181 (access roads and management of surface water); and • C-182 (watercourse consents). The implementation of these embedded environmental measures in combination with those proposed on the third party housing site are envisaged to avoid any significant cumulative effects (on the shared drainage regime). Regarding the work taking place at the construction compound and across the works areas: Working hours are stated in Section 4 of **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** and are outlined in Section 4.4 of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**. Following receipt of Relevant Representations and information shared at Issue Specific Hearing 1, C-22 within the **Commitments Register** **[APP-254]** has been updated at the Deadline 1 submission to the following: **'***Core working hours for construction of the onshore components will be 08:00 to 18:00 Monday to Friday, and 08:00 to 13:00 on Saturdays, apart from specific circumstances that are set out in the Outline COCP, where extended and continuous periods of construction are required.* *Prior to and following the core working hours Monday to Friday, a 'shoulder hour' for mobilisation and shut down will be applied (07:00 to 08:00 and 18:00 to 19:00). The activities permitted during the shoulder hours include staff arrivals and departures, briefings and toolbox talks, deliveries to site and unloading, and activities including site and safety inspections and plant maintenance. Such activities shall not include use of heavy plant or activity resulting in impacts, ground breaking or earthworks.'* This has been updated in the **Outline Construction Traffic Management Plan** **[PEPD-035a]** for the Deadline 1 submission and will be updated in the **Outline Code of Construction Practice** **[PEPD-033]** for the next submission of this document. As outlined in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**, no activity outside these hours (including Sundays, public holidays, or bank holidays) will take place apart from under the following circumstances: • Where continuous periods (up to 24 hours, 7 days per week) of construction work are required for HDD (as HDD is a continuous activity that cannot be paused once started); • for other works requiring extended working hours such as concrete pouring which will require the relevant planning authority to be notified at least 72 hours in advance;

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		• or the delivery of abnormal loads to the connection works, which may cause congestion on the local road network, and will require the relevant highway authority to be notified at least 72 hours in advance; or • as otherwise agreed in writing with the relevant planning authority. Any out of work hours beyond those listed above will be detailed by a Section 61 application of the Control of Pollution Act 1974 with agreement sought by the relevant Local Planning Authority. Commitment C-263 includes the production of a Noise and Vibration Management Plan (NVMP) during detailed design based on the principles in the **Outline CoCP** **[PEPD-033]**, which is secured by Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. Section 4.4 of the **Outline CoCP** **[PEPD-033]** details of aspects of general site management and good housekeeping that will be enforced at all construction work areas. This includes positioning of temporary offices, plant and storage sites away from sensitive receptors, speed limits and pest control. In addition, lighting will be designed and positioned to minimise light spillage outside of construction areas and disturbance to nearby residents. Section 5.4.8 of the **Outline CoCP** **[PEPD-033]** includes details of best practicable means that the Contractor(s) will adopt to minimise noise impact at construction areas. The **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** provides details of construction traffic routes for the Proposed Development. As part of this, the Applicant can confirm that Horsemere Green Lane is not included as a permitted construction traffic route. This will be secured through the stage specific CTMP in accordance with Requirement 24 of the **Draft DCO** **[PEPD-009]** Details regarding reinstatement are outline in Section 4.10 within the **Outline CoCP** **[PEPD-033]** which states that following completion of onshore construction activities, temporary infrastructure including main temporary construction compounds, trenchless crossing compounds, soil storage areas, cable stringing out areas and accesses will be reinstated to the extent possible. Section 4 of the **Outline Landscape and Ecology Management Plan (LEMP)** **[APP-232]** details the reinstatement approach for each landscape element and habitat type and is secured through Requirements 12 and 13 of the **Draft DCO** **[PEPD-009]**.
2.16.8	9. General concerns that the Inspector should consider are: • The instability of the coastline shown as Work Area 6 in document APP – 009. The coast has been subject to significant erosion and its defences breached in early 2020 extensively flooding Work Areas 7, 8, and 9 south of the A259 see attachment 2). Recent flooding in October and November 2023 is a reminder of the fragility of the remaining shingle bunds maintained by the Environment Agency. The Inspector should note the threat that the Environment Agency will withdraw further work if they judge further maintenance uneconomic. • The cumulative impact of the proposed Rampion 2 development works, traffic being undertaken on a similar timescale to West Sussex County Council plans to upgrade the A259 through Clymping, and the Arun District Council strategic housing development just to the west of Church Lane. Together these are likely to cause major disruption to the lives of residents by	**Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** and its associated Annex A: Meeting minutes cover the Environment Agency's 'do minimum' strategy for the management of the Climping shingle defences as set out in the Arun to Pagham Flood and Coastal Erosion Risk Management Strategy. Meetings were held with the Environment Agency (in November 2020 and March 2022) to understand the baseline and future flood risk at these locations and within the Arun Valley within the context of recent storms (Annex A of **Appendix 26.2: Flood Risk Assessment, Volume 4**). The Environment Agency stated their preferred approach for the long-term management of this defence is to allow the shingle embankment to naturally realign to a more naturally sustainable position. Whilst there is noted uncertainty with regards to the anticipated future coastlines presented, a sequential approach has been considered to locate the transitional joint bay on the landward side of the most extreme of these estimates. The landfall options were also located as part of a sequential approach at the most optimal locations in relation to the peak sea levels sourced from the Environment Agency's Coastal Design Sea Levels Database and Lower Arun tidal modelling results. The landfall locations TC-01 and TC-01a were sited on higher land in Flood Zone 1 (low flood risk) with the lowest hazard ratings for both the present day and future (2070) 0.5% Annual Exceedance Event (AEP) Probability events as illustrated on Figure 26.2.3a and 26.2.3b in **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216].** Drone footage also illustrates the typical flowpaths from sea flooding in the event of overtopping in Feb 2020 (Storm Ciara) where floods were channelled along the lower lying land and circumnavigated around the landfall sites. This provided evidence that the landfall areas were not inundated, consistent with the assessment of flood risk in the FRA.

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Ref	Relevant representation comment	Applicant's response
	seriously restricting travel, both private and public, and access by emergency services. • We feel that the documentation fails to recognise today's coastal, travel chaos and development pressures on the Climping community and to which Rampion 2 will only add. We wonder what steps the Project will take to compensate the community. So far, we see only evidence of the downsides of this project locally.	As noted in paragraph 10.2.3 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** there is a suite of suitable embedded environmental measures in Table 8-1 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** which have been put in place to minimise any potential residual risk from tidal flooding to and from the proposed works. The key commitments (C-247 and C-118) in relation to the landfall works are summarised as follows. Further ground investigation will be carried out at the landfall location post-DCO as outlined in C-247 (**Commitments Register [APP-254])** which will inform the exact siting and detailed design, as well as the need for any further adaptation measures to help minimise the vulnerability of assets. The investigations will be carried out pursuant to article 18 of the **Draft DCO [PEPD-009]**, to inform the coastal erosion and future beach profile estimate assessment and implementation of mitigation secured via the **draft DCO [PEPD-009]**, Schedule 1, Part 3, Requirement 26 Coastal erosion (1), (2). Requirement 26 (**draft DCO [PEPD-009])** states that: "*No works comprising Work Nos. 6 or 7 are to commence until a coastal erosion and future beach profile estimation assessment has been carried out and a scheme identifying any mitigation or adaptive management measures required to help minimise the vulnerability of this part of the Order land from future coastal erosion and tidal flooding (if required) has been submitted to and approved in writing by the Environment Agency*." An Emergency Response Plan for Flood Events (C-118, **Commitments Register [APP-254]**) will also be prepared to address the flood risk to construction activities and personnel as within the **Outline CoCP [PEPD-033]** secured via Requirement 22 of the **draft DCO [PEPD-009]**. This will help effectively protect site personnel and equipment from any risk of flooding from the sea during construction. On this basis the construction site will be safe from flooding even in the event of sea flooding and proposals are not reliant on the defences remaining in position. Longer term (during the operational and maintenance phase) this will also be the case as the landfall will be buried and resilient to flooding. Coastal erosion around the Climping landfall has been assessed within **Chapter 6: Coastal processes, Volume 2** of the ES **[APP-047]** and no significant effects are predicted to occur.
2.16.9	The Government has set ambitious targets for offshore wind which has a key role to play in tackling climate change and the UK's move towards Net Zero, setting a target to deliver up to 50GW by 2030, including up to 5GW of floating wind. Rampion 2 was first consulted on in 2021, the Parish Council raised the following concerns which are relevant to this round of consultation which deals with onshore cable route changes: • The details of the construction plan and the impact on the village of the construction and installation works, the construction traffic and where equipment might be stored locally. The detail of the proposed horizontal drilling works and the potential risks of this to the fragile coastline and sea defences at Clymping. The Parish Council have looked in detail at the issues raised in Areas 1a and 1b of the consultation documents and carefully considered the supporting PEIR SIR. It is very clear that Clymping faces disproportionate impacts on village life and the Parish Council cannot support the proposals until suitable impact mitigation measures have been agreed.	The likely significant transport effects of the construction phase of the Proposed Development including temporary construction compounds and trenchless crossing compounds have been assessed within **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]**. With the implementation of embedded environmental measures (as described in the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]** which is secured through Requirement 24 of the **Draft DCO [PEPD-009]**), no significant transport effects have been identified in relation to identified sensitive receptors within Climping. Horizontal Directional Drill (HDD) has been proposed to minimise risk to the integrity of the embankment as noted in embedded environmental measure C-43 in the **Commitments Register [APP-254]** secured via **Draft DCO [PEPD-009]**, Schedule 12, Part 2, Condition 2 (8). The outcome of the ground investigation as outlined in C-247 (**Commitments Register [APP-254])** will inform the exact siting and detailed design of the drilling works. Environmental measure C-17 is also included to ensure adherence to the permitting regime which will cover any temporary construction activities in close proximity to the Environment Agency flood defence.

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Ref	Relevant representation comment	Applicant's response
2.16.10	• Horizontal Directional Drilling MR01 and MR02 North of A259 The modified route shown in brown would reduce the length of cabling needed, but noise and vibration would be a major concern. The Parish Council have been advised that the drilling operation would be 24 hours continuously with a noise level of 90decibels. The background noise level for this rural area in daytime is approximately 50 decibels. There is no detail of any noise reduction measures. There is no detail of any monitoring or remedial actions. No details of the period of time for drilling has been shown. The Parish Council anticipates noise nuisance. For a 24 hour operation night time lighting will also be required. There appears to be no evidence of any lighting assessment. The Parish Council strongly oppose drilling in MR01 and MR02 unless there are adequate steps to mitigate the operational noise and the impact of lighting especially on the residents of Climping Park and Brookpit Lane.	Section 5.4 of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** describes the practical measures and monitoring to be implemented to reduce the impact of onshore noise and vibration during construction. A Noise and Vibration Management Plan will be developed in accordance with the **Outline CoCP** **[PEPD-033]** and include best practicable means the Contractor(s) will adopt to minimise noise during construction in all areas. Construction plant will be carefully procured to ensure compliance with noise limits quoted in European Commission Directive 2000/14/EC, United Kingdom Statutory Instruments (SI) 2001/1701. Localised screening and temporary barriers will be also be installed in proximity to sensitive receptors. As stated in Table 21-29, **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]**, estimated drilling duration is provided for each HDD location, typically trenchless crossings are short term construction activities. For trenchless crossings (such as horizontal directional drill (HDD)), drills will be housed within acoustic cladding and associated acoustic louvres. Mud pumps will be housed in temporary acoustic shrouds. Noise monitoring will be agreed with the relevant planning authority, through Section 61 of the *Control of Pollution Act 1974* consent, where applicable Commitment C-263 includes the production of a Noise and Vibration Management Plan (NVMP) during detailed design based on the principles in the **Outline CoCP** **[PEPD-033]**, which is secured by Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. (Please refer to the Applicant's response to **reference 2.16.8** above). The effects of lighting during the construction phase on settlements, transport routes and recreational receptors have been considered at a high level in Sections 1.2 to 1.5 within **Appendix 18.4: Visual Assessment, Volume 4** of the Environmental Statement (ES) **[APP-170]**. **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** summarises the visual effects on views from sensitive receptors during construction in Section 18.11. No 'lighting assessment' has been undertaken in relation to onshore construction works due to the practical difficulties with such an assessment based on methodology, detailed design, location, duration / timing and specification. We are not aware of any other examples of a night-time lighting assessment being undertaken for construction lighting along cable corridors / temporary HDD compounds. Rather, the advice from the South Downs National Park Policy SD8: Dark Night Skies has been incorporated into Commitment C66 and C200. These measures will minimise the effects of any night-time construction lighting across all of the onshore works areas.
2.16.11	Landscape Features There are insufficient details in the PEIR SIR to understand the type of landscape features which may be lost during the construction phase and also no details of the types of planting during reinstatement. The cable corridor may look very different during operation compared with preconstruction. The Parish Council are aware that the local land owner is developing a wild life corridor across this area, but can find no evidence to suggest this matter has been looked at or considered as part of the proposals. The Parish have been informed that remedial works on the Coastal Path (path 829) are scheduled for early 2023. The proposals will have implications for this work and the proposed English Coastal Pathway, but there is no evidence that this has been given any consideration. Until there is clarity, the Parish Council will oppose cabling works in this area.	**Chapter 18: Landscape and visual impact, Volume 2** of the Environmental Statement (ES) **[APP-059]** assesses landscape and visual effects of the onshore elements of the Proposed Development. The landscape assessment is provided in Table 2-1 of **Appendix 18.3: Landscape assessment, Volume 4** of the ES **[APP-169]**, and reports on the effect of the onshore elements of the proposed development on the local landscape character and landscape elements or features. A visual assessment is also provided in **Appendix 18.4: Visual Assessment, Volume 4** of the ES **[APP-170]** and Section 1.4 provides an assessment of the visual effects of the onshore elements of the Proposed Development on views from the English Coastal Path. Significant visual effects are assessed as likely to affect up to 400m of the route, during the construction period. Whole project effects resulting from the visibility of the offshore elements of the Proposed Development including the Wind Turbine Generators will also be significant and are reported in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**. The proposals for planting and reinstatement of the onshore cable corridor are included in Section 4 of the **Outline Landscape and Ecology Management Plan** **[APP-232]** and will be secured through Requirements 12 and 13 of the **Draft DCO** **[PEPD-009]**. The Applicant has had an introductory meeting with the Weald to Waves project that a Climping landowner is involved with. Opportunities to work with local landowners on biodiversity enhancements are sought by the

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		Applicant. Should landowners express an interest in the area affected (or other areas within their local landholding) being enhanced for biodiversity this would be delivered through the commitment made to Biodiversity Net Gain (BNG) (see **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES **[APP-193]**. BNG is secured through Requirement 14 of the **Draft DCO** **[PEPD-009]**. With regards the English Coastal Path, this will not be directly affected by the Proposed Development as this will be crossed via a trenchless crossing as outlined in Table 4-1 of the **Outline Public Rights of Way Management Plan** **[APP-230]** secured via Requirement 20 of the **Draft DCO** **[PEPD-009]**.
2.16.12	Impact on the School and Community Amenities A number of routes and construction compounds are shown in Areas 1a and 1b. There is no information on the types of vehicles and plant to be used or stored there during the construction/operational phase or the steps that will be taken to manage the operations.	The **Outline Construction Traffic Management Plan (CMTP)** **[PEPD-035]** details the vehicles and routing during the construction phase of the Proposed Development. It also provides details of controls and mitigation measures that will be applied to minimise the impact of construction traffic associated with the Proposed Development. Tables 5-3 and 6-2 within the **Outline CMTP** **[PEPD-035]** show the number of heavy goods vehicles (HGVs) and light goods vehicles (LGVs) that will use each access junction along the onshore cable route secured via Requirement 24 of the **Draft DCO** **[PEPD-009]**. Access A-01 located on Ferry Road (providing access to Area 1a) will be used by 1,812 HGV two-way movements and 2,178 LGV two-way movements during the construction phase. Access A-09 located on the northern side of the A259 will be used by 1,338 HGV two-way movements and 1,026 LGV two-way movements.
2.16.13	Is it proposed to produce a construction Traffic management plan and will Parishes have an input? The Parish Council are strongly opposed to the compounds/operational sites as they affect the Church Green and to the north and west of the school and down Bread Lane. The reasons for this view are:	The **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** provides details of controls and mitigation measures that will be applied to minimise the effects of construction traffic associated with the Proposed Development. The consultation and engagement feedback provided by key stakeholders informed the need for an **Outline CTMP** **[PEPD-035a]** accompanying the DCO Application and informed this document. Please see the Applicant's response to **2.16.3** above regarding concerns raised on Bread Lane and Church Green. Furthermore, the **draft DCO** **[PEDP-009]** includes a Requirement 24 to submit a stage specific CTMP (which accords with the **Outline CTMP** **[PEPD-035a]**) for approval by the highway authority in consultation with the relevant planning authority before that stage can commence.
2.16.14	There will be considerable disruption in the village for 3 years 2026-29	Disruption has been minimised through the measures set out in the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]**. The likely significant transport effects of the construction phase of the Proposed Development including temporary construction compounds and trenchless crossing compounds have been assessed within **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]**. With the implementation of embedded environmental measures (as described in the **Outline CTMP** **[PEPD-035a]**), no significant transport effects have been identified in relation to identified sensitive receptors within Climping.
2.16.15	This will be compounded by the timing of the A259 developments and the Strategic housing site which are likely to coincide with these proposals. These include a new roundabout on the A259, works at Ferry Road junction, a new roundabout near the Oystercatcher. The proposed access AA01 will be opposite a new access to the 300 House development	The likely significant transport effects of the construction phase of the Proposed Development has been assessed in **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]** **Chapter 32: ES Addendum** (Document reference: 6.2.32) (submitted at Deadline 1) and in **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[APP-197]** which has been updated at the Deadline 1 submission. Based upon the peak week sensitivity test included in the **Chapter 32: ES Addendum** (Document reference: 6.2.32) (submitted at Deadline 1), receptor 5 (the A259 west of Wick) will experience the following traffic flow increases as a result of the Proposed Development:

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		• A 5.3% increase in heavy goods vehicles (HGVs) during the peak HGV week across the construction programme (week 83), which is an increase of 50 HGVs and 57 Light Goods Vehicles (LGVs) per day; and • A 4.5% increase in total traffic flow during the overall peak construction traffic week (week 72), which is an increase of 45 HGVs and 76 LGVs per day. Noting that construction traffic movements will occur across the core working hours of 07:00-19:00 each day (see paragraph 8.4.13 of the **Outline Construction Traffic Management Plan** (**CTMP**) **[PEPD-035a]**), this is the equivalent of approximately 3-4 HGVs and 6-7 LGVs per hour in each of the peak scenarios. It is therefore not anticipated that this construction traffic will have a material impact on traffic conditions during construction of the strategic housing development or associated highway works. All estimates of future baseline traffic flows used within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum** (Document reference: 6.2.32) (submitted at Deadline 1) were based on TEMPro forecasts, which is a program developed by the Department for Transport providing traffic growth projections. These projections take account of national and local predicted growth in population, employment, housing (including sites allocated in the Local Plan) and is the industry standard approach to assessing future baseline traffic. Use of this methodology was also agreed with West Sussex County Council (WSCC) and National Highways during consultation. Following the implementation of embedded environmental measures (such as the **Outline CTMP** **[PEPD-035a]**, no significant effects have been identified in relation to transport receptors in Climping. The 300 house development project referenced was included as part of the cumulative effects assessment within the ES where relevant (**Chapter 6: Coastal processes, Volume 2** **[APP-047]** to **Chapter 29: Climate change, Volume 2** of the ES **[APP-070]**), this development is referred to as ID13 (CM/48/21/RES).
2.16.16	Locating a compound to the north and west of the school is unacceptable due to disruption, noise, dust in dry weather depending on the as yet undefined operations. This compound and the access down Bread Lane should be withdrawn given the proposals to move the cable east towards the River Arun for which access from Ferry Road is more suitable.	Access A-04 is located on Bread Lane and is for operational purposes only as shown on the **Onshore Works Plans Sheet 1** **[PEDP-005]**. Such access will be associated with scheduled and unscheduled maintenance with byway 197 used to access the onshore cable route from the public highway. Paragraphs 23.4.21 and 23.4.22 within **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]** describe the expected operational and maintenance phase activities which includes periodic testing of the cable through attendance by up to three light vehicles such as vans in a day at any one location. Unscheduled maintenance or emergency repair visits for the onshore cable will typically involve a very small number of vehicles, typically light vans. Infrequently, equipment may be required to be replaced, then the use of an occasional HGV may be utilised, depending on the nature of the repair.
2.16.17	Residents have made it clear to the Parish Council that the operational area at Church Green is unacceptable given the sensitivity of the green for the village as an area of memorial and the setting of the Church and Church Hall. It should be removed given the proposed increase in operational flexibility south of Field Place and access to MR02.	With respect to concerns raised around the operational area at Church Green the previously proposed operational access along the road adjacent to St Mary's Church and Green is no longer proposed to be used for the Proposed Development and not included within the proposed Order Limits (Section 6.8.1 (ID A1-39), **Appendix 6, Annex 2 Consultation Report** **[APP-029]**).
2.16.18	There is no information or assessment of the drainage through the area south of Field Place. This is a serious omission given the critical importance of proposals for drainage from the Clymping strategic housing site through this area. It is the Parish Council's recommendation that site MR01 be used as the sole operational and construction compound south of A259 routing from Ferry Road. The	See detailed responses under **reference 2.16.8** above with regard to Clymping Parish's drainage concerns at the area south of Field Place. The implementation of embedded environmental measures as detailed in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**, which will be secured by Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]** as part of the Construction Phase Drainage Plan. The delivery of these measures in combination with the drainage strategy for the third party strategic housing site, is anticipated

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	Parish Council also strongly recommends that the proposals for operations and access from Church Green are withdrawn given the proposal to expand flexibility of operations south of Field Place given the inclusion of area AA01 shown on Plan 1b.	to ensure there are no significant cumulative effects on the functionality of that drainage regime. This is outlined in Table 26.32 and Table 26.34 of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**.
2.16.19	Routing from Ferry Road removes the impact on Bread Lane a very popular walking route to the beach.	See above response to **reference 2.16.17**.
2.16.20	Any access from Ferry Road however requires careful timing consideration with the proposed A259 works at Ferry Road/Climping Park.	See above response to **reference 2.16.16**.
2.16.21	All this work is critically dependant on the EA maintaining the bund sea defences for an extended period rather than seeing "what they can do" annually. Emergency works were underway this weekend owing to overtopping and flooding due to storm damage to the bund. The project should be encouraged to contribute to the shingle moving costs.	The Applicant has sited the landfall options in accordance with the advice received from the Environment Agency during consultation. The work is not dependent on the Environment Agency maintaining the bund sea defences. In relation to concerns about flood risk from the sea during construction, we are confident that the sequential approach to careful siting of the landfall, the implementation of HDD works and emergency flood response planning will ensure that there is no increase in flood risk in the area from the development and that the construction personnel, and equipment will all be adequately safe during the works. **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** and its associated 'Annex A: Meeting minutes cover the Environment Agency's 'do minimum' strategy for the management of the Climping shingle defences as set out in the Arun to Pagham Flood and Coastal Erosion Risk Management Strategy' held with the Environment Agency (in November 2020 and March 2022) to understand the baseline and future flood risk at these locations and within the Arun Valley within the context of recent storms (Annex A Meeting minutes of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**). The Environment Agency stated their preferred approach for the long-term management of this defence is to allow the shingle embankment to naturally realign to a more naturally sustainable position. Whilst there is noted uncertainty with regards to the anticipated future coastlines presented, a sequential approach has been considered to locate the transitional joint bay on the landward side of the most extreme of these estimates. The landfall options were also located as part of a sequential approach at the most optimal locations in relation to the peak sea levels sourced from the Environment Agency's Coastal Design Sea Levels Database and Lower Arun tidal modelling results. The landfall locations TC-01 and TC-01a were sited on higher land in Flood Zone 1 (low flood risk) with the lowest hazard ratings for both the present day and future (2070) 0.5% Annual Exceedance Event (AEP) Probability events as illustrated on Figure 26.2.3a and 26.2.3b in **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**. Drone footage also illustrates the typical flowpaths from sea flooding in the event of overtopping in Feb 2020 (Storm Ciara) where floods were channelled along the lower lying land and circumnavigated around the landfall sites. This provided evidence that the landfall areas were not inundated, consistent with the assessment of flood risk in the **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**. As noted in paragraph 10.2.3 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** there is a suite of suitable embedded environmental measures in Table 8-1 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** which have been put in place to minimise any potential residual risk from tidal flooding to and from the proposed works. Further ground investigation will be carried out at the landfall location post-DCO as outlined in C-247 (**Commitments Register** **[APP-254]**) which will inform the exact siting and detailed design, as well as the need for any further adaptation measures to help minimise the vulnerability of assets. The investigations will be carried out pursuant to article 18, to inform the coastal erosion and future beach

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Ref	Relevant representation comment	Applicant's response
		profile estimate assessment and implementation of mitigation secured via the **draft Development Consent Order [PEPD-009]**, Schedule 1, Part 3, Requirement 26 Coastal erosion (1), (2). Requirement 26 (**draft DCO [PEPD-009])** states that: "*No works comprising Work Nos. 6 or 7 are to commence until a coastal erosion and future beach profile estimation assessment has been carried out and a scheme* identifying any mitigation or adaptive management measures required to help minimise the vulnerability of this part of the Order land from future coastal *erosion and tidal flooding (if required) has been submitted to and approved in writing by the Environment Agency*". With these commitments in place there will be no impact on the sea defence from construction itself. **Chapter 6: Coastal processes, Volume 2** of the ES **[APP-047]** concludes that construction (and operation and maintenance activities) will not significantly impact coastal morphology and offshore sediment transport and therefore the development will not increase the risk of coastal flooding and erosion. An Emergency Response Plan for Flood Events (C-118, **Commitments Register [APP-254**]) will also be prepared to address the flood risk to construction activities and personnel. This will help effectively protect site personnel and equipment from any risk of flooding from the sea during construction. On this basis the construction site will be safe from flooding even in the event of sea flooding therefore the proposals are not critically dependant on the maintenance of the sea defence as suggested within the relevant representation comment. Longer term during the operational and maintenance phase, the landfall will be buried and resilient to flooding.
2.16.22	Access south of Field Place removes the impact on the Grade 1 listed heritage Church and the Church Green. Supporting these concerns, with specific reference to the cumulative effects of traffic flows on the A259 and the wider road network around Clymping, is the lack of comprehension and understanding of the current traffic issues, and no detail or modelling of future traffic flows. Any traffic assessment must look at the cumulative effects and not just on the additional traffic movements from this project.	The **Outline Construction Traffic Management Plan (CTMP) [PEDP-035a]** includes prescribed traffic routes for construction traffic associated with the Proposed Development. As shown on Figure 7.6.6a of the **Outline CTMP [PEDP-035a]** all construction traffic will access the Temporary Construction Compound at Climping via the A27, A284 and A259 (i.e. from the South). The **draft Development Consent Order [PEDP-009]** includes Requirement 24 to submit a stage specific CTMP (which accords with the **Outline CTMP [PEPD-035a]**) for approval by the highway authority in consultation with the relevant planning authority before that stage can commence. The traffic and transport impacts of the construction phase of the proposed development has been assessed in detail within **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]**. All estimates of future baseline traffic flows used within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** (Document reference: 6.2.32) (submitted at Deadline 1) were based on TEMPro forecasts, which is a program developed by the Department for Transport providing traffic growth projections. These projections take account of national and local predicted growth in population, employment, housing (including sites allocated in the Local Plan) and is the industry standard approach to assessing future baseline traffic. Use of this methodology was also agreed with West Sussex County Council (WSCC) and National Highways during consultation. Taking account of the incorporation of appropriate embedded environmental measures (such as the **Outline CTMP [PEPD-035a])**, no significant effects have been identified in relation to transport receptors in Climping.
2.16.23	The PEIR SIR refers to meetings and discussions with various stakeholders, but Parish Councils have only been aware of high-level detail through the liaison group. This means local knowledge and experience have not been given the appropriate weighting. Clymping Parish Council remains open to further detailed discussion of all the points above but cannot support the proposals as they stand.	In addition to the written consultation process which has presented detailed proposals and called for feedback, the Applicant has undertaken engagement primarily through the Evidence Plan Process, which is with technical stakeholders, including local authorities. The minutes of these meetings are presented within the **Evidence Plan [APP-243-253]**. Parish Councils have been able to participate in the Onshore Project Liaison Group, and members of the Rampion 2 project team visited officers of Clymping Parish Council to explain the onshore proposals during the 2022 Supplementary Onshore Statutory Consultation.

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		The Applicant held a virtual meeting on 20 August 2020 to present the initial offshore Area of Search and cable corridors, highlighting the need to make landfall at Climping Beach and promoting upcoming consultations. In addition to membership of the Onshore Project Liaison Group, Clymping Parish Council were also invited to the Parish Councillors virtual meetings during the statutory project-wide consultation in 2021. The consultation as a whole was promoted with a roadshow on Climping Beach on 25 August 2021. As part of the statutory onshore consultation, The Applicant held one of the four public exhibitions at Arun Yacht Club on Rope Walk Riverside West, a short walk from Climping Beach.

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Table 3-7 Applicant's Response to Cowfold Parish Council [RR-083]

Ref	Relevant representation comment	Applicant's response
2.17.1	This letter of representation is made by Cowfold Parish Council on behalf of its residents and provides a proportionate response, taking into account the varied views put forward by householders within the parish. The Parish Council acknowledges the progress made in diverse green energy generation across Great Britain and the future scope of non-fossil based alternatives. However, the impact of the proposed Rampion 2 project on the road infrastructure, an ongoing cause of anxiety in Cowfold as the village stands on the confluence of the A272 and A281, is of concern to the whole community. Particular aspects of which are highlighted below at Serial 2. Correspondence between the Chairman of the Parish Council and Rampion 2 (dated respectively 11 January 2023 and 24 April 2023) iterated and reiterated misgivings about the volume and clarity of communication between Rampion 2 and the local community which resulted in confusion, disinformation a lack of understanding regarding the potential longer term impacts on the parish. Cowfold Parish Council wishes to take a proactive part of the Development Consent Order process of inquiry and investigation supporting the Examining Authority's exhaustive process to ensure that further uncertainties do not proliferate. Principal Areas of Concern Identified by the Parish Council on Behalf of Residents.	The Applicant has no comment to make on this introduction and addresses comments on specific matters in the following **references 2.17.2 – 2.17.6** below.
2.17.2	Clarity of information provided: As noted above the initial standards of communication(s) from Rampion 2 to residents, in particular those proximate to the proposed substation development site, were found to be varied and at times sparse. The volume of material given on the Rampion 2 website is exhaustive but not necessarily easily digested by the general public. This has been a recurring issue, raised directly with Rampion 2 by a number of residents and the Parish Council, the concerns remain outstanding causing perplexity and upset within the community.	As noted by Cowfold Parish Council, the Applicant provided detailed and extensive information to support consultations, including a Preliminary Environmental Information Report, draft Works Plans and a draft Development Consent Order, which go far beyond the standards required by legislation and guidance. These have been supplemented by public facing consultation brochures and websites to summarise this information and signpost further detail. Throughout the consultations, the project team responded to queries by phone, email, online presentations, and (after Covid restrictions were lifted) in-person information events (see **Consultation Report** **[APP-027** to **APP-030]**.
2.17.3	Traffic, Road Safety and Levels of Pollution: Cowfold parish is already subject to significant daily levels of traffic movements with concomitant concerns in specific areas of the village relating to air pollution levels. Rampion 2 initially provided, at a Parish Council sponsored Public Meeting held in November 2022, an overview of proposed traffic volumes specifically relating to the project. Sight of recent material indicates these have been revised by Rampion 2 showing the A272 and A281 (south) routes through Cowfold as being used for construction traffic. This is directly in contravention to the assurances given by Rampion 2 to the Parish Council and residents. There are extant concerns over road safety usage, particularly in respect of traffic volume and speed management, as a number of recent accidents (November 2022 – October 2023) on both arms of the A272 east and west of Cowfold have demonstrated. Additional vehicular movements will enhance the possibility of further accidents and incidents. Increased traffic volume (heavy and light) is likely to see significant numbers of motor vehicles travel down adjacent narrow, single	To limit the effects on these receptors a range of embedded environmental measures have been provided by the Applicant as detailed within the **Commitments Register** **[APP-254**] which has been updated at the Deadline 1 submission and secured through the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]**. The production of a stage specific CTMP in accordance with the **Outline CTMP** **[PEPD-035a]** is secured through Requirement 24 of the **Draft DCO** **[PEPD-009].** The **Outline CTMP** **[PEPD-035a]** has been updated at the Deadline 1 submission including: • Commitment C-157: The proposed heavy goods vehicle (HGV) routing during the construction period to individual accesses will be developed to avoid major settlements of Storrington, Cowfold, Steyning, Wineham, Henfield, Woodmancote and other smaller settlements where possible; and • Commitment C-158: The proposed heavy goods vehicle (HGV) routing during the construction period to individual accesses will avoid the Air Quality Management Area (AQMA) in Cowfold where possible. These commitments are also reflected in Table 5-1 of the **Outline CTMP** **[PEPD-035a]** which has been updated at the Deadline 1 submission and confirms prescribed local Heavy Goods Vehicle (HGV) access

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	track roads which are unsuitable for such use. Cowfold has a primary school, situated adjacent to the A272 (west) with parents bringing, often by foot, their children to the school five days per week. For those families which live within Cowfold village there is at least one major road (A272 or A281) to cross whilst walking their children to school. Increased traffic is likely to impact on the already challenging road safety issues both pedestrian and vehicular for parents taking their children to or collecting them from the primary school.	routes for all sections of the onshore cable corridor and Table 5-2 which details specific local constraints and proposed management of construction traffic routes. These commitments ensure that HGV construction traffic will route along the A27 and A23 to gain access to the A272 east of Cowfold wherever possible, thereby avoiding the village centre. Therefore only accesses A-52, A-56 and A-57 will require construction traffic to route through Cowfold Village centre. As calculated by using data included in Table 5-3 of the **Outline CTMP [PEPD-035a]** which has been updated at the Deadline 1 submission, the impact of this commitment is the removal of up to 22,000 two-way HGV trips (11,000 HGVs) from Cowfold Village centre over the construction phase. Whilst commitment C-157 and C-158 (**Commitments Register [APP-254]**) discourages traffic from routeing through the Cowfold AQMA for robustness within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**, it has been assumed that approximately 25% of HGV traffic will route through Cowfold from the A24 and A272 east of the village centre when entering or exiting construction accesses at Oakendene, Kent Street or Wineham Lane. In relation to construction LGV traffic, these have been split into three categories within the **Outline CTMP [PEPD-035a]** (which has been updated at Deadline 1) to allow consideration of LGV staff traffic, LGV delivery traffic and LGV construction traffic. Whilst no routing restrictions have been placed on LGV staff traffic routing to and from the temporary construction compounds and onshore substation at Oakendene (as is normal for staff routing to a place of work), routes have been identified for all LGV delivery traffic and LGV construction traffic. This also assumes that all LGV construction traffic including deliveries will route to one of the temporary construction compounds first and then if needed onto work sites via Multi-Occupancy Vehicles to limit the amount of construction traffic traveling to individual work sites. The likely significant transport effects associated with the construction phase of the Proposed Development have been assessed in **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]**, **Chapter 32: ES Addendum, Volume 2** (Document reference: 6.2.32) (submitted at Deadline 1) and **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[APP-197]** which has been updated at the Deadline 1 submission. At peak construction, taking account of the construction traffic routing contained within the **Outline CTMP [PEPD-035a]** which has been updated at the Deadline 1 submission, the following effects have been identified for Cowfold: • At A281 south of Cowfold (Receptor 23): ▸ An HGV peak week increase of 12 HGVs per day, equivalent to an increase of 7.5% and approximately one HGV per hour; and ▸ A total construction traffic peak week increase of one HGV per day and 71 light goods vehicles (LGVs) per day (5-6 per hour), equivalent to a 1.1% increase in total traffic flow. • The A281 / A272 in the centre of Cowfold (Receptor 24): ▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 3.5% and 3-4 HGVs per hour; and ▸ A total construction traffic peak week increase of 19 HGVs and 154 LGVs (12-13 per hour), equivalent to a 0.7% increase in total traffic flow. • The A272 Station Road west of Cowfold Village centre (Receptor 25):

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Ref	Relevant representation comment	Applicant's response
		▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 4.6% and 3-4 HGVs per hour; and ▸ A total construction traffic peak week increase of 19 HGVs and 154 LGVs (12-13 per hour), equivalent to a 0.9% increase in total traffic flow. • The A272 Bolney Road east of Cowfold Village centre (Receptor E): ▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 5.5% and 3-4 HGVs per hour; and ▸ A total construction traffic peak week increase of 19 HGVs and 147 LGVs (12-13 per hour), equivalent to a 0.8% increase in total traffic flow. As noted within Institute of Environmental Management and Assessment (IEMA) 1993 publication *Guidelines for the Environment Assessment of Road Traffic* (IEMA, 1993) an increase of less than 10% is not discernible environmental effect as is within day-to-day fluctuations in traffic flow. Therefore, no significant effects are predicted to occur within Cowfold. Impacts from construction road traffic emissions at sensitive receptor locations within Cowfold, and Cowfold Air Quality Management Area (AQMA) specifically, have been assessed in **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]**. The air dispersion traffic modelling used traffic data based on annual peak daily traffic, rather the annual average daily traffic stipulated in the Department for Environment, Food And Rural Affairs (Defra) *Local Air Quality Management Technical Guidance* (2022). Therefore, the completed assessment was highly conservative. Impacts from emissions of Nitrogen Dioxide (NO_2), Particulate Matter 10 (PM_{10}) and Particulate Matter 2.5 ($PM_{2.5}$) were considered. The assessment concluded that the impact from construction road traffic emissions are negligible at all sensitive receptor locations, including residential receptors within the AQMA.
2.17.4	Impacts on Local Economy: Reservations have been expressed by a number of businesses in the parish, particularly in the proximate Oakendene Light Industrial Estate, about the impact of construction traffic on their ability to conduct, supply and fulfill their business obligations throughout the extended construction period. This in turn may impact on the continuation of these businesses in Cowfold and the supporting employment which they provide to the members of the local community.	Please see responses in **references 2.17.3** above. At peak construction activity, access A-62 (Oakendene Compound) will cater for 326 HGV two-way movements and 456 LGV two-way movements across a one-week period. This is the equivalent of 156 construction traffic two-way movements per day or 13 per hour (approximately 6 entering and 6 exiting the compound). At peak construction activity, access A-63 (Oakendene Substation) will cater for 326 HGV two-way movements and 564 LGV two-way movements across a one-week period. This is the equivalent of 178 construction traffic two-way movements per day or 14-15 per hour (approximately 7 entering and 7 exiting the access junction). Based on these construction traffic flows and the conclusions of the **Chapter 23 Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum** (Document reference: 6.2.32) (submitted at Deadline 1), no significant effects have been identified in relation to transport receptors.
2.17.5	Landscape and Ecological Impacts: The earliest documented records of Cowfold date back between 1210-1232 (Common Era) and it has remained a primarily rural parish with areas of historic woodland, diverse wildlife and established ecology. Cowfold Parish Council, whilst	**Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]** describes the effects on the ecological features present. Through design of the Proposed Development the mitigation hierarchy has been applied so that efforts have been made to avoid ecological features, minimise levels of effect where avoidance is not possible (e.g. trenchless crossings), mitigate effects (e.g. through sensitive

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	appreciating that part of the Rampion 2 project requirements are the reinstatement of areas affected by the cable trenches and the provision of an effective and appropriate green screen/landscaping protocol around the substation, raises concerns about habitat disturbance. This is at a time when conservation groups have evidenced a 41% decline in UK species since the 1970s (Natural History Museum) with more than one in seven native species facing extinction. Clarification in respect of preserving this noteworthy landscape and its associated habitats is a matter of particular concern to the Parish Council and residents alike. The community looks to the Examining Authority to ensure that all government guidelines in respect of nature preservation and promotion are upheld.	temporary lighting design) and compensate for residual effects. Although there will be short term effect on a number of ecological features, the approach to construction, the reinstatement of habitats and habitat creation (both at the onshore substation site and as part of biodiversity net gain delivery) will provide a positive legacy for ecology in the medium to long term. With regards to the general UK and global decline in species, climate change is the greatest driver behind these trends. Offshore wind is a leading form of renewable energy generation and is an available technology that can be deployed swiftly at scale for reducing carbon emissions.
2.17.6	In Conclusion: As the formal representative body for the community and thus an Interested Party, Cowfold Parish Council wishes to play a proactive part for the duration of the Inquiry in addressing these issues identified in the Development Consent Order process.	The Applicant has no further comments on this matter at this time.

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Table 3-8 Applicant's Response to Kingston Parish Council [RR-192]

Ref	Relevant representation comment	Applicant's response
2.18.1	Kingston Parish Council strongly opposes the application for the Rampion 2 Offshore Wind Farm. Council first raised its concerns during consultations held by Rampion in the lead up to this application and is disappointed that these concerns have not been sufficiently addressed. Council's objections are set out below.	The Applicant is grateful for Kingston Parish Council's participation in the statutory consultation. The themes raised by the Parish were addressed in the **Consultation Report** [**APP-027**] provided with the DCO Application, and are further discussed in the rows below. Notably, since the Parish Council's statutory consultation response, the extent of the offshore array and number of turbines has been reduced, and a suite of ecological mitigation measures embedded into the design of the Proposed Development.
2.18.2	The Location: Whilst Council fully supports the need to bring on stream more renewable energy, wind farms need to be located with sensitivity to the amenity and landscape of the local area. It is important to focus investment on projects which will give the best return in the efficiency of producing energy and balancing this against the impact it will have on the local area. There have been reports that over the summer the power output from the existing Rampion 1 installation has fallen to only 2.25% of its nominal capacity due to lack of wind power. There are other sites around the coast where the turbines can be set much further out to sea to reduce the visual impact such as at Dogger Bank in the North Sea and these will also benefit from increased wind strength and efficiency. There is no justification for the argument that there is a need for a wind farm to be sited along the Sussex Coast to serve the local population, as power from the wind farm is fed into the National Grid whether it is generated off of Sussex or in the North Sea. The location is contrary to government policy: - It is within inshore waters, and this is against the OESEA2 government guidelines that all offshore wind projects should actually be offshore i.e. more than 12 nautical miles (14 miles) from shore. - It is contrary to the OESEA3/White report that identifies that wind farms with the height of the Turbines proposed should be more than 25 miles from a sensitive area such as the South Downs National Park.	The overarching National Policy Statement for Energy (EN-1 – both 2011 and 2024 versions) state that the urgent need for new energy generation justifies a variety of projects, which should not be compared against each other. The requirement for a diversity of supply is most clearly expressed in the 2024 NPS EN-1 in paragraph 3.2.4. A wind farm on the south coast, alongside those in the North Sea, may provide power at different times based on local wind conditions, smoothing the availability of supply. Further, generation close to the south coast conurbation reduces the need for grid reinforcements to carry power across the country in new overhead lines. The Applicant has provided information on the performance and output from the Rampion 1 Offshore Wind Farm in in the summary from the oral submissions from the Issue Specific Hearing 1, agenda point 2(ii) (see **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (**Document Reference 8.25**) (submitted at Deadline 1)) and in response to the Examination Authority's Action Point 2. The Offshore Energy Strategic Environmental Assessment (OESEA) (White Consultants and Northumbria University, 2020) proposes 34 km (21.3 miles) offshore as a suggested buffer for all scales of wind farm development to avoid significant adverse effects on a combined National Park and Heritage Coast. The OESEA is a strategic tool that does not suggest no-go areas for development and is not guidance or a roadmap for placing of wind farms, which are allocated by The Crown Estate and it is not in the Applicant's remit to locate sites to avoid all impacts.
2.18.3	The Visual Impact: There will be an extremely detrimental visual effect on the seascape given: - Rampion 2 is to be sited only some 8 miles from the shoreline - this is far too close. Turbines of this size and quantity should be sited much further out to sea and not inshore. - This stretch of the West Sussex coastline is an inappropriate location for such a large wind farm. The English Channel is too narrow to enable the turbines to be positioned far enough out to sea to be acceptable. - The much larger sized turbines than for Rampion 1 (up to 325m above the sea at low tide – taller than the Eiffel Tower!) will have a greater visual impact than Rampion 1, during the day and when lit at night. - The combined and extended span of Rampion 1 and 2 will unacceptably affect the seascape of an extensive part of the Sussex coastline, 'fencing' in the Sussex Bay. This will impact on the views for residents and tourists as well as views from iconic sites such as Arundel Castle and the South Downs National Park.	The visual effects of the wind turbine generators are assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP056]**. The Design principles are described in Section 15.7 of the chapter which sets out how the design of the Proposed Development provides embedded environmental measures addressing visual effects, in response to stakeholder comments, including a reduction in the spatial extent of the Rampion 2 array area, it's spread and quantity of wind turbine generators within it. Opportunities to reduce effects through turbine height reduction are limited due to the technical and economic requirements associated with producing renewable energy as well as other environmental factors.
2.18.4	The Environmental Impact: There will be a detrimental impact on the Environment due to: - The effect of turbines on birds, bats etc. as their safe flight corridors will be lost. - The disturbance of the seabed that will impact on the plants and sea creatures. For instance, the loss of Black Bream in our area and of breeding grounds for lobsters and	The potential effects on birds are assessed in **Chapter 12: Offshore and intertidal ornithology, Volume 2** **[APP-053]** and the proposed embedded environmental measures are set out in Table 12-20, for the effect of turbines on birds, this includes:

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Ref	Relevant representation comment	Applicant's response
	crabs. - The adverse effect on the countryside and its wildlife due to the laying of cables from Climping to Bolney. This includes passing through, and disturbing, the protected South Downs National Park.	• There will be a minimum blade tip clearance of at least 22m above MHWS. As bird flight heights tend to be skewed towards lower altitudes, collision risk is reduced if the minimum blade tip height is larger. This is secured by Requirement 2 (2)(c) of the **Draft DCO** **[PEPD-009]**. Following the implementation of the measures set out in Table 12-20, no significant effects are predicted to occur. A suite of mitigation measures has been proposed to reduce effects on the seabed and Black Seabream (*Spondyliosoma cantharus*); these are set out in detail in the **In Principle Sensitive Features Mitigation Plan** **[APP-239]**. The potential effects on lobsters and crabs have been assessed in Section 8.9 to 8.12 of **Chapter 8: Fish and shellfish ecology, Volume 2** of the ES **[APP-049]** and no significant effects are predicted to occur. In addition to this, the introduction of wind turbine generator foundations and scour protection will create additional refuge areas which have the potential to result in positive effect for crustacean species such as the brown crab and European lobster. The Applicant acknowledges that some residual effects have been identified on the onshore cable route. The design of the Proposed Development has sought to avoid, reduce and minimise any residual effects through provision of embedded environmental measures during the construction phase. This includes the measures in the **Outline Code of Construction Practice** **[PEPD-033]** which will be secured by Requirement 22 of the **Draft DCO** **[PEPD-009]**, **Commitments Register** **[APP-254]**, technical chapters of the ES (**Chapter 6 Coastal processes, Volume 2** **[APP-047]** to **Chapter 29: Climate change, Volume 2** of the ES **[APP-070]**) and other topic specific plans including those for landscape, terrestrial ecology (see **Outline Landscape and Ecology Management Plan** **[APP-232]** which will be secured by Requirement 12 of the **Draft DCO** **[PEPD-009]**. The grid connection point is a key driver for identifying the initial cable route options. As identified in Section 3.3 of **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**, the grid connection options that would avoid the South Downs National Park that were considered were assessed as not being economically viable, and do not present a viable alternative to development taking place within the South Downs National Park. Further explanation of the choice of the landfall location and cable route options is provided in **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**.
2.18.5	The Economic Impact: The sea view is cited as one of the main reasons to visit the West Sussex coastline and the proposal will affect tourism which is vital to the area and to our larger towns such as Littlehampton, Bognor and Arundel. Additionally, Fisherman will be adversely affected due to the loss of breeding grounds and habitats for marine life, including crab and lobster.	**Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** details relevant studies and evidence from offshore wind farms in the UK which shows that there has been no evidence of overall negative impact on the tourism economy from the development of offshore wind farms in the UK. This evidence included analysis of tourism employment numbers for Rampion 1 which showed higher levels of tourism and employment across Sussex coastal seaside towns over the period in which Rampion 1 was operational compared to before Rampion 1 began construction. The assessment of the impact on the volume and value of tourism detailed in Sections 17.9, 17.10 and 17.11 of **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** considers the changing public perceptions of offshore wind as evidenced by the UK Governments Public Attitudes Tracker. The assessment explores the impact on tourism and finds that overall, when all influencing factors are considered, the effect of Rampion 2 on the volume and value of tourism across Sussex is

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Ref	Relevant representation comment	Applicant's response
		expected to be negligible. While there may be some people with negative perceptions of offshore wind farms who may be deterred from visiting, these are likely to be small in number and could be offset by those who are more likely to visit the area due to the development of offshore wind. For example, those visiting the existing Rampion visitor centre or those going on boat trips to the offshore infrastructure of Rampion 1 (see paragraph 17.9.27, **Chapter 17 Socio-economics, Volume 2** of the ES **[APP-058]**. **Chapter 10: Commercial fisheries, Volume 2** **[APP-051]** examines the likely significant effects on commercial fisheries that may be experienced as a result of the Proposed Development. A range of environmental measures are embedded as part of the Proposed Development design (as set out in Table 10-12) to remove or reduce any significant environmental effects on commercial fisheries, as far as possible. These include: • Advance warning and accurate location details of construction, maintenance and decommissioning operations, delivered via Notices to Mariners and Kingfisher Bulletins (as secured by Condition 5 (7) & (8), Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**. • Ongoing liaison with fishing fleets through all stages of the Proposed Development. Including the appointment of a Fisheries Liaison Officer and the production of a Fisheries Liaison and Co-existence Plan (as secured by Condition 11(1)(g) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**) in accordance with the **Outline Fisheries Liaison and Co-existence Plan** **[APP-241]** was submitted with the Application. Based on the proposed location of the offshore infrastructure and its subsequent operation, plus the incorporation of appropriate environmental measures, No Significant Effects have been identified in relation to the potential impact of the Proposed Development on commercial fisheries. Additionally, an **Outline Fisheries Liaison and Co-existence Plan** **[APP-241]** was submitted with the application.
2.18.6	Conclusion: The adverse impacts of Rampion 2 would demonstrably outweigh the benefits for both current and future generations of residents and visitors. The wind farm will damage our seaside views and beauty, deterring people attracted to visit or live here and stifling the economic benefits that visitors and new residents bring.	The Applicant considers that, when considered with reference to National Policy Statements, the considerable climate change benefits of the project would outweigh the assessed harms. This is set out in the **Planning Statement** **[APP-036]**.

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Table 3-9 Applicant's Response to Littlehampton Town Council [RR-203]

Ref	Relevant representation comment	Applicant's response
2.19.1	These proposals were considered by the Town Council at its meeting held on 12 October 2023. The Council welcomed the proposal which embraced the use of wind farm technology as both a sustainable form of power generation and, recent evidence would suggest, encouraged the regeneration and growth of the marine environment. The proposed development will have a significant effect on the Town.	The acknowledgement that Proposed Development will contribute to climate change mitigation is welcomed by the Applicant. The Proposed Development will help meet the urgent need for new renewable energy infrastructure in the UK and supporting the achievement of the UK Government's climate change commitments and carbon reduction objectives.
2.19.2	The visual, environmental, and engineering challenges that the scheme presents are significant and Council sought reassurances regarding the safety and minimisation of the impact on the environment of the onshore cabling system needed to transmit the energy generated to the inland network. In the early days of these proposals, the Town Council identified the impact of the wind farm on the local fishing fleet, the Harbour, and the existing sea and river flood defences as their primary concerns in connection with this scheme. In terms of the impact on the local fishing industry and harbour, we await publication of Arun District Council's Local Impact Assessment.	The Applicant acknowledges that some residual effects have been identified on the onshore cable route as presented in Table 22-30 of **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement (ES) **[APP-063]**. The design process has sought to avoid, reduce and minimise any residual impacts through providing embedded environmental measures during construction. This includes the embedded environmental measures in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** and other topic specific plans including those for landscape and ecology, and on the local fishing fleet (see **Outline Landscape and Ecology Management Plan (LEMP)** **[APP-232]** secured via requirement 12 of the **Draft Development Consent Order** **[PEPD-009]** and the **Outline Fisheries Liaison and Co-Existence Plan** **[APP-241]**) secured via Schedule 11, Part 2, Condition 11 (1) (g) and Schedule 12, Part 2, Condition 11 (1) (g) of the **Draft DCO** **[PEPD-009]**.
2.19.3	The other concerns however remain, and the Council would like to put forward some practical ways in which the Scheme, if approved, could contribute to the area. It is our view that a development of this size and significance could have a significant impact on the existing sea and river flood defences and their management in the future. We therefore consider that the Scheme should make a meaningful contribution to the much-needed repair and ongoing maintenance of the existing river and coastal defence infrastructure.	The Applicant considers that the impacts of the Proposed Development, as proposed, are adequately mitigated. Nonetheless, where local authorities propose a mitigation in relation to an assessed harm, these will be considered.
2.19.4	Another way that the Scheme could provide long-term community support would be a visitor centre facility similar to that which has been set up in Brighton for Rampion 1. Our members believe this would work well as a visitor attraction and could be introduced in Littlehampton. Finally, regarding the process of approving this type of development and in view of its central location and facilities, we would like to offer the Town Council's Offices as a possible venue for the Public Examination	The Rampion Visitor Centre has proved to be a visitor attraction. However, the Applicant can't commit to a Visitor Centre for Rampion 2 at this stage in development and such a proposal would be separate and distinct from the DCO application. The Planning Inspectorate decided the venue for the Preliminary Meeting and Public Hearings.

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Table 3-10 Applicant's Response to Lyminster and Crossbush Parish Council [RR-207]

Ref	Relevant representation comment	Applicant's response
2.20.1	We understand that members of our community have previously responded to your consultation exercise, yet their views appear to have been disregarded in some of the latest proposals. Namely routes traversing higher quality farming land including the area of the organic egg farm at The Brewhouse and a possible diagonal section of route through prime agricultural land from Lyminster towards Poling are highly undesirable. It has been pointed out that low productivity agricultural land to the south of Black Ditch would be a more preferable route traversing north alongside the Southern water high pressure main/ gas main and sewage pipe or even along the Angmering/ Poling border. We remain of the opinion that all of the routes coming directly through our parish are generally to a greater or lesser degree detrimental to our community. Other options are available including investigating the possibility of laying a cable up the course of the River Arun. We have heard no technical argument as to why this could not be pursued and would appreciate your response specifically on this matter.	The Applicant welcomes the involvement of Lyminster and Crossbush Parish Council during the cable routeing process. This representation appears to reiterate a consultation response received in 2023, which was responded to at the time. Environmental factors have been taken into consideration with regard to the cable routing such as minimising construction works in flood risk zones. Construction works along the course of the River Arun would be unlikely to meet policy requirements such as minimising works in high flood risk areas, associated with the River Arun transitional Water Framework Directive (WFD) body. From an ecological perspective the River Arun is extensively protected with the Arun Valley Local Wildlife site, Arundel Park SSSI, Amberley Wild Broos SSSI and Pulborough Brooks SSSI, Arun Valley SPA, Arun Valley Ramsar and Arun Valley SCA (the latter 3 being international designations). The refinement process for the alterative cable routes considered have been presented in Section 3.4 of **Chapter 3: Alternatives, Volume 2 [APP-044]**.
2.20.2	We would also appreciate a full technical explanation as to why Rampion 2 could not be connected to Rampion 1 and partially utilise the existing infrastructure to reach the National Grid. Even if the entire length of that infrastructure connection to the National Grid required upgrading it would significantly minimise the additional environmental damage (biodiversity loss, habitat destruction, long-term ecosystem damage, etc) caused by an entirely new connection following an entirely new path as you now propose.	The Applicant considered using the route of the Rampion 1 export cable for its own export cable, which is described in Section 3.4 of **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]**. This found that the route was heavily constrained, and it would not have been possible to place new cables alongside the existing – see paragraph 3.4.18 and Table 3-5. At the time of investment in 2015, there was no immediate prospect of future Crown Estate leasing rounds for this area. The Crown Estate first suggested a round for extension proposals in 2018. The industry regulator requires every project to be designed and invested in an economic and efficient manner, to minimise cost to the end consumer, which prevents us from building speculative/spare capacity. The cables for the original Rampion project were therefore rated at a maximum capacity of 400 MW. There are a number of pinch points where the land is congested with environmental and physical constraints. The original landfall location at Brooklands Pleasure Park, in Lancing, is highly congested with underground pipes and services, as well as cables from the Rampion 1 scheme. There are significant constraints at Teville Stream and at the old landfill site at Brooklands. Further north at Tottington Mount, the original cable route has utilised the available width on the crest of the hill, such that a parallel route would require 'benching' into the side of a hillside (such as used for roads/railways running across slopes), which has potential significant and unacceptable impacts due to visual and habitat sensitivities. The Rampion 1 onshore and offshore transmission assets have been integrated into the National Grid through the OFTO (Offshore Transmission operator) regime and is now owned and operated by TC Rampion OFTO Ltd. Hence the Applicant doesn't own or operate the network.
2.20.3	The undeniable benefit of sustainable energy schemes should not licence the project to deliver irreversible environmental and disruption to the communities affected. The disruption and medium-term inconvenience likely to be caused to our community warrants a compensatory consideration from the proposed scheme. Just like communities affected by on-shore wind turbine schemes we believe there should be a mechanism for residents in	The Applicant notes the comments made with regards to benefits for local communities. Community benefits are not a legal or DCO requirement and are quite distinct from the consenting process, a point reiterated in the Government (Department for Energy Security and Net Zero) response to the consultation on Community Benefits for Electricity Transmission Network Infrastructure (Dec 2023), which stated,

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	our community to benefit from a discounted energy tariff as a result of this scheme should it go ahead.	"*The proposals on community benefits for electricity transmission network infrastructure discussed within this document will remain separate to the planning process. It will not be a material consideration in planning decisions, and not secured through those decisions*." That said, the Proposed Development will be a permanent neighbour in the Sussex community and the Applicant intends to develop and implement a community benefits package of proposals. In the second half of 2024, the Applicant will therefore be consulting key stakeholders and local communities on how a community benefit package could best support Sussex communities. The final package may include a range of initiatives to benefit business, education and residential communities.

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Table 3-11 Applicant's Response to Pagham Parish Council [RR-283]

Ref	Relevant representation comment	Applicant's response
2.21.1	Members are extremely concerned by the scale of the turbines proposed under the scheme. It was noted that on p51-60 of the Rampion 2 Wind Farm Category 6: Environmental Statement Volume 3, Chapter 15: Seascape, landscape and visual impact assessment (Part 5 of 8) Date: August 2023 Revision A, a visualisation of the impact on the views from Pagham Beach were shown. For perspective, the current marker for Pagham's historic Mulberry Harbour is shown and it is clear that at 325m tall, the turbines will dwarf this marker and be of huge impact on the views from the beach. Members believed this impact to be severe and felt it could impact visitor numbers to Pagham which would harm the local economy. Members believe the location of turbines of this size (only 16km offshore) is too near. There is no other site in the UK where turbines of this size are used this close to shore; they are usually 25km away. In the EU, they are located 60km away. No rationale given as to why this would be acceptable given the obvious pronounced impact on the visual amenity of the area.	The Applicant has considered the visual impact of the offshore infrastructure in its assessment of the impact on the tourism economies of Sussex coast. There are a number of significant operational UK offshore wind farms that are less than 25km from shore (including Westermost Rough, Humber Gateway, Lincs, Thanet, Kentish Flats Extension, Gwynt y Mor and Rampion 1). **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** details relevant studies and evidence from offshore wind farms in the UK which shows that there has been no evidence of overall negative impact on the tourism economy from the development of offshore wind farms in the UK. This evidence included analysis of tourism employment numbers for Rampion 1 which showed higher levels of tourism and employment across Sussex's coastal seaside towns over the period in which Rampion 1 was operational compared to before Rampion 1 begun construction. The Rampion Visitor Centre is attracting tens of thousands of visitors each year and a number of independent charter vessels have diversified their businesses to run trips to visit the Rampion Wind Farm. In November 2022, the Applicant commissioned Yonder, an independent polling organisation, to conduct a public opinion survey of local attitudes towards Rampion 2, with 82% of the Sussex community supporting principally rising to 86% after hearing the policy proposals. Just 9% feel the disadvantages outweigh the advantages and just 7% think the potential visual impact means they oppose the project despite any advantages.
2.21.2	Turbines of this size are appropriate for offshore locations, not inshore as in this case.	The visual effects of the wind turbine generators are assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP056]**. The Design principles are described in Section 15.7 of the chapter which sets out how the design of the Proposed Development provides embedded environmental measures addressing visual effects, in response to stakeholder comments, including a reduction in the spatial extent of the Rampion 2 array area, it's spread and quantity of wind turbine generators within it. Opportunities to reduce effects through turbine height reduction are limited due to the technical and economic requirements associated with producing renewable energy as well as other environmental factors. OESEA4 (2022) is the latest Strategic Environment Assessment (SEA). Considerations with respect to the visual impacts of offshore wind farms are provided In Section 5.8 and Appendix 1, with reference to the White 2020 report (White Consultants, March 2020). OESEA4 (2022) recognises that *"In practice development scenarios will vary for each individual wind farm and also the variables determining visibility for individual wind farms. The visibility of structures from the coast, or their intrusion on sites designated for their visual qualities, does not necessarily preclude development in planning (see: NPS (EN-1) and the MPS), and any consideration of coastal "buffers" is too generalised an approach to take into consideration the many anthropogenic and natural variations along the coast and the variety of development scenarios which might take place (e.g. installation number, type, design and orientation)".* The OESEA (2022) therefore does not suggest no-go areas for development, it is a strategic tool and is not guidance or a roadmap for placing of wind farms, which are allocated by The Crown Estate and it is not in the Applicant's remit to locate sites to avoid all impacts.
2.21.3	The wind is insufficient.	The developer for Rampion 2, RWE, has over 20 years of experience in constructing and operating offshore wind farms, and has determined that Rampion 2 is a viable site and productive location for wind energy generation, with a predicted wind speed of ~9.3 m/s.

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Ref	Relevant representation comment	Applicant's response
		The latest figures show that the operating Rampion Wind Farm exceeded target generation[1] by 15% in 2023. Rampion has exceeded its target for three of the four complete years of operation from 2020-23 and in terms of total generation across this period, Rampion has exceeded the target by 8%[2]. It is not only the wind resource that makes Rampion 2 an ideal location for an offshore wind farm. With the southeast of England being one of the most densely populated regions in Europe, it's a huge demand centre for electricity. Rampion 2 can therefore create a greater contribution to electricity generation close to where the demand centre is located, which reduces transmission losses and requires no electricity storage facilities. 1. Target generation is 1,367GWh per year. Assumed capacity factors for offshore wind, The Contracts for Difference (Standard Terms) Regulations August 2014, DECC. Generation: 400MW x 0.39 x 8760 x 1,000 = 1,366,560,000KWh / 1,367GWh pa) 2. Total target for 2020 – 2023 = 5,468GWh (4 x 1,367GWh). Total actual generation for 2020 – 2023 = 5,919GWh (2020 = 1,600GWh, 2021 = 1,363GWh, 2022 = 1,376, 2023 = 1,580GWh.

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Table 3-12 Applicant's Response to Pulborough Parish Council [RR-305]

Ref	Relevant representation comment	Applicant's response
2.22.1	From a local standpoint the concern would be the proposed compound at Washington. Considering the extra traffic that this would this generate on already busy roads through Pulborough given the restrictions on the A29 and A283 where would the points of access be.	The likely significant transport effects of the construction phase of the Proposed Development have been assessed within **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]** **Chapter 32: ES Addendum, Volume 2** (**Document reference: 6.2.32**) (submitted at Deadline 1) and in **Appendix 23.2: Traffic Generation Technical Note, Volume 4** **[APP-197]** which has been updated at the Deadline 1 submission. Based on the peak week sensitivity test used within the ES Addendum (submitted at Deadline 1) a worst-case heavy goods vehicle (HGV) flow will occur in week 87 of the construction programme where the Proposed Development will generate 44 heavy goods vehicles (HGVs) and 91 light goods vehicle (LGVs) per day at Receptor 17 (A283 east of the A24). In addition, the worst-case overall increase in traffic will occur in week 85 where there will be 43 HGV and 114 LGVs per day. Noting that construction traffic movements will occur across the hours of 07:00-19:00 each day (see paragraph 8.4.7 and 8.4.8 of the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** **(**updated at Deadline 1) which is secured through requirement 24 of the **Draft Development Consent Order** **[PEPD-009]**), this is the equivalent of approximately 3-4 HGVs per hour and 9-10 LGVs per hour. It is therefore not anticipated that this construction traffic will have a material impact on the operation of Washington Roundabout. It should also be noted that this construction traffic impact is related to construction traffic movements taking place between the A24 and A283 east of Washington Roundabout. The A283 west of construction access A-32 and A-34 do not form permitted HGV routes within the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a].** Further to this, discussions between the Applicant and West Sussex County Council (WSCC) are ongoing regarding the design for the access junction to the Washington temporary construction compound with a view of finding an acceptable solution before the end of the Examination.
2.22.2	Likely damage to the South Downs escarpment required to connect the power cables to the inter-connectors and will cause further disruption to the environment.	The **Outline Construction Method Statement** **[APP-225]** (secured through Requirement 23 of the **Draft DCO** **[PEPD-009]**) describes the methods of construction which will be implemented during the onshore elements of the Proposed Development including temporary haul road and accesses, open trenching and trenchless crossings. The **Outline Code of Construction Practice (CoCP)** **[PEPD-033**] (secured through Requirement 22 of the **Draft DCO** **[PEPD-009]** includes and secures the embedded environmental measures to avoid, prevent or reduce the impacts arising during the construction of the Proposed Development. The **Outline CoCP** **[PEPD-033]** is supported by a number of management plans including (but not limited to): • **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]**) secured through Requirement 24 of the **Draft DCO** **[PEPD-009]**); • **Outline Public Rights of Way Management Plan** **[APP-230]** secured through Requirement 20 of the **Draft DCO** **[PEPD-009]**;

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Ref	Relevant representation comment	Applicant's response
		• **Outline Soils Management Plan [APP-226]** secured through Requirement 22 of the **Draft DCO [PEPD-009]**; • **Outline Landscape and Ecological Management Plan (LEMP) [APP-232]** secured through Requirement 12 of the **Draft DCO [PEPD-009]**; and • **Outline Site Waste Management Plan (SWMP) [APP-225]** secured through Requirement 22 of the **Draft DCO [PEPD-009]**. Details regarding reinstatement are outline in Section 4.10 within the **Outline CoCP [PEPD-033]** secured through Requirement 22 of the **Draft DCO [PEPD-009]** which states that following completion of onshore construction activities, temporary infrastructure including main temporary construction compounds, trenchless crossing compounds, soil storage areas, cable stringing out areas and accesses will be reinstated to the extent possible.
2.22.3	The turbine pylons cause considerable damage to the seabed during construction and further damage occurs due to the vortices created by the strong currents between the pylons.	Impacts from wind turbine generator foundations to the seabed and changes to the tidal, wave and sediment transport regimes due to the presence of wind farm infrastructure are assessed in**, Chapter 6: Coastal processes, Volume 2** of the Environmental Statement (ES) **[APP-047]** and **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-050]**. The design of the Proposed Development has sought to avoid, reduce and minimise any residual effects through provision of embedded environmental measures, these include: • C-38 – *The selection of the foundation type will primarily be based upon the site conditions combined with the wind turbine generator (WTG) that is selected. The following foundation types are being considered: Monopile and Multi-leg*. C-38 is secured via Requirement 2 of the Draft DCO **[PEPD-009]**. • C-39 – *To maintain suitable operational conditions for the combined foundation and wind turbine generator (WTG) structure, scour protection (typically consisting of rock aggregate or stone/concrete mattresses) may need to be installed. The method of scour protection will generally be to use rock armour or other large size aggregate placed around the periphery of the foundation at the seabed. However, other methods of scour protection may be used.* C-39 is secured via Schedule 11, Part 2, Condition 11 (1) (i) and Schedule 12, Part 2, Condition 11 (1) (i) of the Draft DCO **[PEPD-009]**. Full details of the embedded environmental measures are listed in Table 6-12 and 9-16, **Chapter 6: Coastal processes, Volume 2** of the ES **[APP-047]** and **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-050]** respectively. Additionally, an **Outline Scour Protection and Cable Protection Plan [APP-234]** has been submitted with the DCO Application. The final Scour Protection and Cable Protection Plan is secured via Schedule 11, Part 2, Condition 11 (1) (i) and Schedule 12, Part 2, Condition 11 (1) (i) of the Draft DCO **[PEPD-009]**. No significant effects are predicted to occur in the coastal processes or benthic, subtidal and intertidal ecology assessments.
2.22.4	Concern with disruption of the flight of migratory birds each year. We are already suffering considerable losses of House Martins, Swifts and Swallows.	Impacts on migratory birds are assessed in **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES **[APP-053]**. The design of the Proposed

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Ref	Relevant representation comment	Applicant's response
		Development has sought to avoid, reduce and minimise any residual impacts through providing embedded environmental measures, these include: • C-89 – *There will be a minimum blade tip clearance of at least 22m above MHWS.* As bird flight heights tend to be at lower altitudes, collision risk is reduced if the blade tip clearance is larger. The blade tip clearance for the Proposed Development has been increased to 22m to minimise this risk whilst considering other factors (i.e. SLVIA concerns). This parameter is secured in Requirement 2 and Schedule 11 *Deemed Marine Licence under the 2009 Act – Generation Assets* of the **Draft Development Consent Order [PEPD-009]**. No significant effects are predicted to occur to migratory birds.

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Table 3-13 Applicant's Response to Selsey Town Council [RR-345]

Ref	Relevant representation comment	Applicant's response
2.23.1	Selsey Town Council Selsey Town Council supports the need to invest in renewable energy infrastructure, including wind farms. This Council recognises that we have a Climate Emergency. Wind farms need to be located sensitively, taking into account the effect they have on wildlife both above and below the waves, the economic impact of local communities and the land and seascapes of the local area.	The acknowledgement that the Proposed Development will contribute to climate change mitigation is welcomed by the Applicant. The Proposed Development will help meet the urgent need for new renewable energy infrastructure in the UK and supporting the achievement of the UK Government's climate change commitments and carbon reduction objectives.
2.23.2	Above the waves, there are still unknown impacts that wind farms have on the airborne wildlife of birds, bats and insects. Below the waves the disturbance during construction and the vibrations during generation will disturb the breeding grounds of protected seahorses, crustaceans including the famous Selsey crab and lobster, and other wildlife. More research is required to understand and quantify this environmental damage. Beyond the waves, the construction and ongoing maintenance of underground cabling and associated infrastructure, will have lasting impact on wildlife throughout the Sussex countryside.	Impacts on birds, bats, insects, seahorse and crustaceans are assessed following relevant legislation and best practice in: • **Chapter 8: Fish and shellfish ecology, Volume 2** of the ES **[APP-049]**; • **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES **[APP-53]**; and • **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-53]**. The following plans include relevant embedded environmental measures: • **Outline Landscape and Ecology Management Plan [APP-232]** secured via Requirement 12 of the **Draft Development Consent Order (DCO) [PEPD-009]**; and • **In Principle Sensitive Features Mitigation Plan [APP-239]** secured via Schedule 11, Part 2, Condition 11 (k) and Schedule 12, Part 2, Condition 11 (k) of the **Draft DCO [PEPD-009]**.
2.23.3	Selsey and the Manhood Peninsular supports a vibrant leisure and tourism industry. This forms the core of the local economy. In addition to leisure and tourism, there is a valued commercial fishing community. The impact of environmental damage on the marine environment, seascape, landscape and connected countryside will all have negative impact on the economic health for the area. The power generation will not bring more reliable, cheaper electricity or financial support to the local economy and those most directly impacted by the infrastructure. The wind farm extension will restrict the safe access to a significant area of commercial fishing. It creates an obstacle to the safe passage of the lifeboat in the event of emergency (especially during periods of poor visibility).	The assessment on tourism is provided in **Chapter 17: Socio-economics, Volume 2** of the Environmental Statement (ES) **[APP-058]** and it concludes that no significant effects would occur. The design of the Proposed Development has sought to avoid, reduce and minimise any residual effects, including on commercial fishing operations and has incorporated embedded environmental measures which are set out in Table 10-12 of **Chapter 10: Commercial fisheries, Volume 2** of the ES **[APP-051]**. In addition, an **Outline Fisheries Liaison and Co-existence Plan [APP-241]** has been submitted with the DCO Application. Following the implementation of the embedded environmental measures, no significant effects on commercial fisheries operations are predicted to occur. The Maritime Coastguard Agency has been consulted pre-DCO Application submission and suitable lines of sight for Search and Rescue (SAR) have been incorporated into the design of the Proposed Development as outlined in **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**. The lines of sight required for SAR or "Wind farm Separation Zones" are areas adjacent to the west and south of the Rampion 1 boundary, where no turbines are permitted to be constructed, these are secured by the **Offshore Works Plans [APP-008]** and shown as areas on sheet 1 of 3 with only horizontal hatching.
2.23.4	Visual Impact The proposed extension to the Rampion Wind Farm potentially extends to within 5 miles of the Selsey coastline. The navigation route between the Mixon and the wind farm is less than 4 miles. OESEA2 government guidelines indicate that wind farms should be located at a minimum of 14 miles from the shoreline. OESEA3 guidelines indicate that the turbines of the proposed size (three times greater than the existing turbines), should be	The visual effects of the wind turbine generators are assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP056]**. The Design principles are described in Section 15.7 of the chapter which sets out how the design of the Proposed Development provides embedded environmental measures addressing visual effects, in response to stakeholder comments, including a reduction in the spatial extent of the Rampion 2 array area, its spread and quantity of wind turbine generators within it. Opportunities to reduce effects through turbine height reduction are limited due to the

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Ref	Relevant representation comment	Applicant's response
	located at least 25 miles from the shoreline. To construct this wind farm extension so close to the shoreline and to build such large turbines, will have a negative impact on the beauty of the views from land and sea. This negative visual impact adds to the negative impact on the local leisure economy. That impact extends far into the surrounding areas.	technical and economic requirements associated with producing renewable energy as well as other environmental factors. The Offshore Energy Strategic Environmental Assessment (OESEA Appendix 2) (OESEA, 2020) proposes 34 km (21.3 miles) offshore as a suggested buffer for all scales of wind farm development to avoid significant adverse effects on a combined National Park and Heritage Coast. The OESEA is a strategic tool that does not suggest no-go areas for development and is not guidance or a roadmap for placing of wind farms, which are allocated by The Crown Estate and it is not in the Applicant's remit to locate sites to avoid all impacts.
2.23.5	Summary The negative impacts of the Rampion 2 extension far outweigh the benefits of renewable energy production and related climate emergency. The wind farm will be an increased blight on the views of the land and seascapes and will cause detriment to the tourism economy. Tourists will go elsewhere. People living in Selsey and the Manhood Peninsular will be economically impacted in a negative way.	National Policy Statement (NPS) EN-1 (DECC, 2011a), extant at the time of submission of the DCO Application and against which it will be tested, outlines that there is an urgent need for new renewable electricity projects. The Proposed Development type (offshore wind) is recognised as being a critical national priority (CNP) in NPS EN-1 and NPS EN-3 (DESNZ, 2023a; 2023b), which came into force in January 2024, for which there is an urgent need to deliver. The Proposed Development could generate enough renewable electricity to meet the equivalent annual electricity demand of 1 million UK homes. It will contribute towards meeting the urgent need for new energy infrastructure in the UK, provide enhanced energy security, support the economic priorities of the UK Government and, critically, make an important contribution to decarbonisation of the UK economy. **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** details relevant studies and evidence from offshore wind farms in the UK which shows that there has been no evidence of overall negative effect on the tourism economy from the development of offshore wind farms in the UK. This evidence included analysis of tourism employment numbers for Rampion 1 which showed higher levels of tourism and employment across Suffolks coastal seaside towns over the period in which Rampion 1 was operational compared to before Rampion 1 begun construction.

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Table 3-14 Applicant's Response to Shermanbury Parish Council [RR-350]

Ref	Relevant representation comment	Applicant's response
2.24.1	Shermanbury Parish Council (SPC) notes that the final decision regarding cable routes through Shermanbury Parish have yet to be decided and depend upon the choice of substation location. The following are our concerns: There will be inevitable disruption to roads, footpaths, and bridleways; this must be minimized if the Parish is to retain its functionality? Wineham Lane is an unclassified, narrow country road which is unsuitable for heavy traffic. Rampion 1 construction has already severely damaged the road surface and verges, and the proposed cable route will finally terminate in the Bolney National Grid site. Greater care of Wineham Lane is important to the local population, and repairs should be undertaken as and when necessary and not on a preordained schedule? Traffic management systems should not be used at the Bolney National Grid site. The road is straight, and a simple give way system is adequate. The Rampion 1 traffic light system became an unacceptable traffic hazard as locals soon learnt that they were largely irrelevant. This breeds contempt for a system which should always be adhered to.	This representation appears to duplicate an earlier consultation response provided to Rampion 2, at a stage when the onshore substation and onshore cable route was not finalised. The onshore substation site selection process considered a number of onshore substation options. Following the first Statutory Consultation exercise in 2021, the onshore substation location was confirmed as Bolney Road/Kent Street (now referred to as 'Oakendene'). The optioneering outcomes for the onshore substation location have been detailed in Section 3.6 of **Chapter 3 Alternatives, Volume 2** of the ES **[APP-044]**. During the construction phase, the onshore elements of the Proposed Development will have a direct, temporary effect on various existing public rights of way (PRoWs). Consideration is given in the **Outline Public Rights of Way Management Plan (PRoWMP)** **[APP-230]** secured via Requirement 20 of the **Draft DCO** **[PEPD-009]** to how those effects can be managed and mitigated where possible and appropriate. The likely significant transport effects of the construction phase of the Proposed Development have been assessed within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**, **Chapter 32: ES Addendum, Volume 2** (Document reference: 6.2.32) (submitted at Deadline 1) and in **Appendix 23.2:Traffic Generation Technical Note, Volume 4** **[APP-197]** which has been updated at the Deadline 1 submission. Based on the peak week sensitivity test used within the **Chapter 32: ES Addendum, Volume 2** (Document reference: 6.2.32) (submitted at Deadline 1), Wineham Lane will experience the following traffic increases during the construction phase of the Proposed Development: • A heavy goods vehicle (HGV) peak week increase of 41 HGVs per day or 3-4 vehicles per hour; and • An overall construction traffic increase of 19 HGVs and 147 light goods vehicle (LGVs) per day or 13-14 construction traffic vehicles per hour. Noting the very low baseline traffic flows and taking account of appropriate embedded environmental measures (such as the **Outline Construction Traffic Management Plan (CTMP)** secured via Requirement 24 of the **Draft DCO** **[PEPD-009]** **[PEPD-035a]**, no significant environmental effects have been identified on Wineham Lane. The **Outline Public Rights of Way Management Plan (PRoWMP)** **[APP-230]** covers how regular inspection of the physical infrastructure will be to maintained paths and other infrastructure in a safe and usable condition. The **Outline CTMP** **[PEPD-035a]** states each access point to any public highway by any temporary construction access road or track utilised as part of the onshore elements of the Proposed Development will be inspected at frequent intervals during the construction phase to enable any repairs to be made in a timely manner throughout the construction phase so that the surface of the highway remains in good repair. The Applicant can confirm that it is not intended to implement traffic signals on Wineham Lane as part of the Proposed Development. The **draft DCO** **[PEDP-009]** includes a requirement (Requirement 24) to submit a stage specific CTMP (which accords with the **Outline CTMP** **[PEPD-035a]**) for approval by the highway authority in consultation with the relevant planning authority before that stage can commence.
2.24.2	Kent Street is extremely narrow and unsuitable for any traffic other than cars, farm machinery, and deliveries for the local inhabitants. Rampion 2 vehicles should not use Kent Street at any time, other than to cross it if necessary. If crossing Kent Street is required, priority for the previously described usage should be maintained at all	Kent Street is identified within the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** (which has been updated at Deadline 1) secured via Requirement 24 of the **Draft DCO** **[PEPD-009]** as a single track road which will be used as a construction traffic route to accesses A-61 and A-64 as shown on Figure 7.6.4d within the **Outline CTMP** **[PEPD-035a]**.

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Ref	Relevant representation comment	Applicant's response
	times. Sub-Station Sites 1. Bolney Rd/Kent Street (Preferred Option) ? This site has the advantage of easy access from the A272 and is an extension of a brown field site- the Oakendene Industrial Estate. It is also the site which is least likely to have an unfavourable impact on local residential communities. ? However.... • The long footprint along Kent Street requires any development to be set back a considerable distance from the small country lane and well screened to avoid visual impact. • The impact on the Grade II Listed building (Oakendene Manor) would need substantial mitigation. • No access for Rampion traffic to the proposed sub-station should be permitted via Kent Street. Entrance and exit should be via the A272. Wineham Lane North This would be an extension of the existing substation/ brownfield site. It would have less of an impact on Wineham Lane if set back further towards the East and must be well screened to reduce visual impact. ? However, it would still increase the industrialisation of the area immeasurably. O the impact on properties on Wineham and Bob Lane (especially Old Doctors sandwiched in between 2 substations) will result in the loss of quality of life, will damage the environment, and will cause financial damage to property values. As a profit-making organisation Rampion must make reparation for this loss oa the affected area if natural justice is to prevail.	At peak construction at this location approximately 274 heavy goods vehicles (HGV) will use Kent Street in one week, equivalent to 55 HGVs per day or 4-5 per hour. This peak construction traffic flow, as detailed in Table 2.4.57 of the **Chapter 32: ES Addendum, Volume 2** of the ES (Document reference 6.2.32), is related to construction access A-64, which is located 200m south of the junction with the A272. The peak construction traffic flow associated with Access A-64, located 700m south of the A272, however is much lower than A-64 with a total construction traffic peak of 31 vehicles per day and an HGV peak of 28 vehicles per day or 2-3 HGVs per hour. Construction traffic will need to use Kent Street for approximately 38 weeks of the construction programme although it is noted that this will not be continuous. There are multiple peaks in construction traffic for access A-61 and A-64, associated with different construction activities that include haul road construction, cable trenching, duct laying, backfilling, HDD activities, cable pulling and haul road reinstatement. Whilst the peak week of construction traffic is predicted to lead to a significant environmental effect (as identified in the **Chapter 32: ES Addendum, Volume 2** of the ES (Document reference 6.2.32) submitted at Deadline 1) this peak lasts for only approximately two weeks of the construction programme. In between peaks the traffic flows will be minimal per day. For example, it is outside of these peak periods, it is predicted HGV flows will be more than 10 vehicles per day (one per hour) for only 13 weeks of the construction programme. It should be noted that both access A-61 and A-64 are located north of residential properties on Kent Street and therefore construction traffic will not route past these properties. This reflects commitment C-157 (**Commitment Register [APP-254]**) which states that HGVs should avoid smaller settlements where possible, the prescribed local access routes defined in Table 5-1 of the **Outline CTMP [PEPD-035a]** and the mitigation identified to avoid the use of small single-track roads as much as possible as defined and secured in Table 5-2 of the **Outline CTMP [PEPD-035a]**. For clarification, the Applicant would like to note that **Outline CTMP [PEPD-035a]** Figure 7.6.6c showing local access routes, Figure 7.6.9c showing routes from compounds to sites and Figure 7.6.13c showing light goods vehicle (LGV) construction access routes are inconsistent and incorrect in relation to use of Kent Street south of the accesses A-61 and A-64. These plans have been updated and submitted as part of an update to the **Outline CTMP [PEPD-035a]** at Deadline 1 to reflect that construction traffic will not use Kent Street south of access A-61 and A-64. Given the single lane track nature of Kent Street, the Applicant is currently reviewing options for the implementation of traffic management along Kent Street and accesses A-61 and A-64 to provide safe access for construction and general traffic. This may involve measures such the implementation of a speed limit reduction, passing places, or managed access via banksmen. A traffic management plan for Kent Street will be produced as required at Deadline 2. The outcomes of this review will be discussed with West Sussex County Council at the earliest opportunity with the aim of reaching an agreement in principle to the traffic management strategy. This would then be secured through a detailed CTMP for the stage of the authorised development comprising Kent Street which will be required to be submitted and approved by the highways authority before commencement within that stage in accordance with Requirement 24(1)(a) of the **draft DCO [PEPD-009]**. The optioneering outcomes for the onshore substation location have been detailed in Section 3.6 of **Chapter 3 Alternatives, Volume 2** of the ES **[APP-044]**. The onshore substation site selection process considered a number of onshore substation options. Following the first Statutory Consultation exercise in 2021, the onshore substation location was confirmed as Bolney Road/Kent Street (now referred to as 'Oakendene'). Paragraphs 3.6.18 to 3.6.26 of **Chapter 3 Alternatives, Volume 2** of the ES

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Ref	Relevant representation comment	Applicant's response
		[APP-044] provides further detail regarding this onshore substation site selection process and outcomes. The Oakendene option was taken forward and presented at the second Statutory Consultation exercise in 2022. Regarding the visual effects of the onshore substation at Oakendene assessed in **Chapter 18 Landscape and visual impact, Volume 2** of the ES **[APP-059]** and **Appendix 18.4 Visual assessment, Volume 4** of the ES **[APP-170]**, Section 3.3 of the **Design and Access Statement** **[AS-003]** details the Landscape Strategy for both the onshore Oakendene substation site and existing National Grid Bolney substation extension site. Bullet point two in Paragraph 3.3.3 of the **Design and Access Statement** **[AS-003]** describes views towards the onshore substation will be designed to maintain the existing rural landscape character as follows: *'Kent Street: existing mature trees and hedges along this wooded road corridor will be retained and strengthened with additional native woodland planting provided to ensure limited views of the substation even in winter. The wooded, rural character of Kent Street will be retained.'* **Appendix D: Oakendene Onshore Substation – Indicative Landscape Plan** of the **Design and Access Statement** **[AS-003]** presents the planned mitigation for the site, including views from the highway. The principles of the **DAS** **[AS-003]** are secured via Requirement 8 of the **Draft DCO** **[PEPD-009]**. The impact on the Grade II Listed Oakendene Manor from the onshore substation at Oakendene is assessed in **Chapter 25: Historic environment, Volume 2** of the ES **[APP-066]** and **Appendix 25.5: Oakendene parkland: historic landscape assessment, Volume 4** of the ES **[APP-212]**, Section 3.4 of the **Design and Access Statement** **[AS-003]** details the historic environment design principles for the onshore substation. Bullet point two in Paragraph 3.4.3 of the **Design and Access Statement** **[AS-003]** describes design principles to mitigate effects at Oakendene Manor. **Appendix D Oakendene Onshore Substation – Indicative Landscape Plan** of the **Design and Access Statement** **[AS-003]** (secured via Requirement 8 of the **Draft DCO** **[PEPD-009]**) presents the planned mitigation for the onshore substation site, including measures targeted at protecting the views from Oakendene Manor.
2.24.3	General comments: Shermanbury Parish Council is aware that these proposals will initially have a huge impact on the local environment. Unfortunately, as the consultation does not give us access to any Environmental Reports, we are not able to fully ascertain the extent of any impact on the local wildlife, flora and fauna. Local residents are still recovering from problems relating to local highways caused by the Rampion 1 project, with 24-hour traffic management systems that failed to work and no way of contacting engineers to rectify the situation. Residents reported sitting at red lights for up to 30 minutes until realising these lights were once again faulty. Should the Wineham Lane North site be selected, Council would like to see the traffic management plan adjusted to ensure that any traffic management system is only in situ during expected working hours which should be restricted to between 08:00 – 17:00 Monday to Friday and 08:00 – 13:00 on Saturdays. Outside of these times no works should be allowed to take place. Provision should also be made for a layby located away from the site on the A23/A272 for HGVs to park up prior to gaining access to the site as this may go some way to reducing the number of movements per hour. As the	The introduction of the Environmental Statement (ES) is presented in **Chapter 1: Introduction, Volume 2** of the ES **[APP-042]**, with a description of the Proposed Development provided in **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**. The approach to the Environmental Statement is set out in **Chapter 5: Approach to the Environmental Impact Assessment, Volume 2** of the ES **[APP-046]**. The details and outcomes from the environmental assessment of the Proposed Development relating to the local wildlife, flora and fauna are presented in the **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**. Further details of the surveys undertaken as part of the environmental assessment for terrestrial ecology and nature conservation are provided in **Appendices 22.2: Terrestrial ecology desk study** to **22.17 Bat tree ground level visual assessment survey report, Volume 4** of the ES **[APP-180]** to **[APP-195]**. The Applicant can confirm that it is not intended to implement traffic signals on Wineham Lane as part of the Proposed Development. Any temporary construction traffic management implementation plans will need to be approved by the highways authority and will be applied in accordance with guidance and procedures as defined within the Act (Section 14 of the Road Traffic Regulation Act 1984). Given the location of Oakendene compound and conclusions of **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum** (Document reference: 6.2.32) (submitted at Deadline 1) it is not considered necessary to implement a holding layby for construction traffic.

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Ref	Relevant representation comment	Applicant's response
	village of Wineham is the largest residential settlement nearest to either of the proposed substation sites likely to be affected by the inevitable aggravation, Shermanbury Parish Council very much hopes that these considerations will be taken into account. Should permissions be granted for any works within our Parish we would welcome the opportunity to work with Rampion to minimise the disruption to our residents.	Working hours are stated in Section 4 of **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** and are outlined in Section 4.4 of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**. Following receipt of Relevant Representations and information shared at Issue Specific Hearing 1, C-22 within the **Commitments Register** **[APP-254]** has been updated at the Deadline 1 submission to the following: '*Core working hours for construction of the onshore components will be 08:00 to 18:00 Monday to Friday, and 08:00 to 13:00 on Saturdays, apart from specific circumstances that are set out in the Outline COCP, where extended and continuous periods of construction are required.* *Prior to and following the core working hours Monday to Friday, a 'shoulder hour' for mobilisation and shut down will be applied (07:00 to 08:00 and 18:00 to 19:00). The activities permitted during the shoulder hours include staff arrivals and departures, briefings and toolbox talks, deliveries to site and unloading, and activities including site and safety inspections and plant maintenance. Such activities shall not include use of heavy plant or activity resulting in impacts, ground breaking or earthworks.'* This has been updated in the **Outline Construction Traffic Management Plan** **[PEPD-035a]** for the Deadline 1 submission and will be updated in the **Outline Code of Construction Practice** **[PEPD-033]** for the next submission of this document. As outlined in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**, no activity outside these hours (including Sundays, public holidays, or bank holidays) will take place apart from under the following circumstances: • Where continuous periods (up to 24 hours, 7 days per week) of construction work are required for HDD (as HDD is a continuous activity that cannot be paused once started); • for other works requiring extended working hours such as concrete pouring which will require the relevant planning authority to be notified at least 72 hours in advance; • or the delivery of abnormal loads to the connection works, which may cause congestion on the local road network, and will require the relevant highway authority to be notified at least 72 hours in advance; or • as otherwise agreed in writing with the relevant planning authority.
Additional Submission by Shermanbury Parish Council accepted 19 December 2023		
2.24.4	Conditions for continued access to be agreed prior to any works Shermanbury Parish Council have been made aware that should the DCO be granted Rampion propose to close a section of Kent Street. The latest plan, see Sheet 32 on the attached Access, Rights of way and Streets Plan, still shows that they plan to close the lane in two places while they cut an open trench to lay the cables. sheet 32 of the attached which shows closures at points 48a – 48b and 50a – 50b with no alternative access to properties. Although Rampion representatives have assured us RED is cognisant of the need for private residents and business owners to access their land, homes and businesses during the construction period and that uncertainty from the lack of presently available detailed planning information on individual Private Means of Access (PMA)	For clarification, the Applicant would like to confirm that there is no intention to close Kent Street during the construction phase of the Proposed Development. Temporary road closures to facilitate the open cut trench crossing of Moatfield Lane (48a-48b) and Kings Lane (50a-50b) are shown within the **Access, Rights of Way and Streets Plans** **[APP-012]**. The strategy to maintain private means of access during this period is described in Paragraph 5.7.10 of the **Outline Code of Construction Practice (CoCP)** [**PEPD-033**]. The following general principles will apply to the managed or private means of access during the cable route construction: • Any access restrictions or effect on individual properties will be kept to a minimum and the Applicant will work with local stakeholders to develop individual solutions to keep disruptions as slow as is reasonably possible;

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Ref	Relevant representation comment	Applicant's response
	management during the construction, could cause concern. Comprehensive management strategies and construction design solutions for individual affected accesses will be developed during the detailed construction design phase after the DCO has been granted, in collaboration with affected stakeholders. engineering design providers and construction contractors the ten households who will effectively be cut off during this road closure would like conditions imposed on the granting of any DCO to ensure the road remains opens at all times. For clarification the lane in question is a dead end which leads to ten households and additional farm land. The closure of this lane will result in all residents and livestock effectively being cutoff from their only means of access. Although Rampion assure council any access restrictions or effect on individuals / businesses will be kept as short as possible even a minimum closure period will cutoff these residents and mean should emergency vehicle access be required this will not be available during the proposed long periods of closure indeed Rampion representatives have highlighted to council "Where a closure is required and no diversion is possible, the duration of this closure will be reduced as much as possible. As a guideline, the closure of a single-track road is anticipated to take approximately 2-3 days." In view of the impact on both residents and livestock we require conditions to be agreed with the residents prior to any works to ensure access is provided at all times	• All crossings of private means of access will be developed to allow emergency access at all times; • Contractors will be required to accommodate reasonable requests for access during the working day by temporary plating of the trench unless a suitable diversion is provided around the works; • The trench will be plated or temporarily backfilled outside of construction working hours where feasible to restore access, unless a suitable diversion is provided around the works; • Any access restrictions or closures will be communicated to all residents and businesses with affected rights of access; and • A nominated point of contact on behalf of the applicant will be communicated to all residents and businesses at least three months before the start of construction. A final Code of Construction Practice will be required to be submitted and approved on a staged basis, in accordance with the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**, pursuant to requirement 22 of the **draft DCO** **[PEPD-009]**.

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Table 3-15 Applicant's Response to Storrington and Sullington Parish Council [RR-369]

Ref	Relevant representation comment	Applicant's response
2.25.1	Members fully support the Government's target to reduce CO2 emissions to zero and believe this should be undertaken as soon as possible. To that end, Members are also fully supportive of the investment in wind power and the building of wind farms including at sea.	The acknowledgement that the Proposed Development will contribute to climate change mitigation is welcomed by the Applicant. The Proposed Development will help meet the urgent need for new renewable energy infrastructure in the UK and supporting the achievement of the UK Government's climate change commitments and carbon reduction objectives.
2.25.2	However, despite this, there are still questions which Rampion 2 consultations have failed to address. Maps provided by Rampion 2 are lacking in detail and do not adequately demonstrate the purpose of all access points. In particular, the issue of the precise usage of the access points along the A283 has been raised multiple times now but we are still awaiting an answer.	Table 4-1 of the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** provides details of the type of all accesses associated with the Proposed Development with further detail of the use and requirements for each category provided in Sections 4.3 to 4.7 within the **Outline CTMP** **[PEPD-035a]**. The locations of proposed access junctions is also shown on Figure 7.6.4b and 7.6.4c of the **Outline CTMP** **[PEPD-035a]** and sheets 19, 20 and 21 of the **Onshore Works Plans** **[PEDP-005]**. For clarity, proposed accesses located west of the A25 consist of: • A-30 on Chantry Lane: Operational only; • A-31 on Sullington Lane: Operational only; • A-32 on Barns Farm Lane: Operational only; • A-33 on A283 opposite Hampers Lane: Construction only; • A-34 on A283: Operational only; and • A-35 on A283: Construction only.
2.25.3	Regarding traffic, Storrington is an incredibly busy village whose air quality is known to be suboptimal, resulting in the Air Quality Management Area (AQMA). Rampion 2 will result in an increase in traffic that may well be occurring concurrently with the permitted 60 bed care home on the site of Old Clayton, the permitted planning application of Care South's Sussexdown care home, and the pending application of the Rock Common Quarry, alongside the plans for the Washington compound to serve as the hub of operations in this area. There have been no assurances that construction/maintenance traffic will not go through the AQMA. Strict routing conditions need to be applied that prohibit traffic from entering the AQMA, but these also need to be enforced. Existing prohibitions regarding surrounding quarries are routinely breached and with the rise in traffic that can be reliably predicted this situation is unacceptable.	**Chapter 19: Air quality, Volume 2** of the Environmental Statement (ES) **[APP-060]** presents an assessment of air quality effects from construction traffic associated with the Proposed Development. The assessment concluded that the Proposed Development will not result in significant air quality effects, as a result of increased traffic on the local road network. Table 19-9 within **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** states that there will be no significant traffic travelling through the Storrington High Street Air Quality Management Area (AQMA) and that Annual Average Daily Traffic (AADT) along the Storrington High Street AQMA are below the IAQM and EPUK 92017) screening criteria for road links in AQMA's, therefore potential effects are negligible. The likely significant transport effects of the construction phase of the Proposed Development have been assessed within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**, **Chapter 32: ES Addendum** (Document reference: 6.2.32) (submitted at Deadline 1) and in **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[APP-197]** which has been updated at the Deadline 1 submission. Based on the peak week sensitivity test used within **Chapter 32: ES Addendum** (Document reference: 6.2.32) (submitted at Deadline 1) the A283 north east of Sullington Lane (receptor O) will experience the following traffic increases during the construction phase of the Proposed Development: • A heavy goods vehicle (HGV) peak week increase of 51 HGVs per day or 4-5 vehicles per hour, which is an increase of 6.3%; and

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Ref	Relevant representation comment	Applicant's response
		• An overall construction traffic increase of 51 HGVs and 86 light goods vehicles (LGVs) per day or 11-12 construction traffic vehicles per hour, which is an overall traffic flow increase of 0.6%. Noting the very low baseline traffic flows and taking account of appropriate embedded environmental measures (such as the **Outline CTMP** **[PEPD-035a]** secured via Requirement 24 of the **Draft DCO** **[PEPD-009]**), no significant environmental effects have been identified on the A283.
2.25.4	There has also been little information to show where and why the routes were changed in the supporting documentation, which has been unhelpful in following the progression of the application and understanding how appropriate conclusions as to a prescribed route are being drawn. Previous consultations are not felt to have truly taken local concerns on board. With a shared Neighbourhood Plan with Washington Parish Council, Storrington and Sullington Parish Council are also strongly supportive of their legitimate concerns, one of which is why a route around Washington, rather than through the village and across the recreation ground, was rejected with no clear or logical explanation. It would appear illogical to enter a further consultation period when there are still questions outstanding that could have been addressed by now. Without informative data, the meaningfulness of this consultation is in doubt.	The refinement process for the alterative cable routes considered have been presented in Section 3.4 of **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**. The Applicant has considered options for the cable route that avoid the underground crossing of the Washington Recreation Ground, including the 'southerly alternative' requested by Washington Parish Council. The option was not presented or commented on in the **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**as it was deemed less suitable on technical engineering and environmental grounds, specifically in relation to the pinchpoint of the proposed route crossing a gas pipeline in the vicinity of ancient woodland. Constrained access from the A24, and the need for existing tracks forming the South Downs Way to be widened, with impacts on hedgerows was a further key factor. The Applicant attended and presented feedback on this decision at the Washington Parish Council meeting on the 7 November 2022. Washington village has been considered in the assessment of environmental effects, which has identified no significant effects with respect to the aspects that affect amenity during construction including traffic and transport, noise, air quality and socio-economics including Public Rights of Way. Please see the response **in reference 2.28.1** below to Washington Parish Council.

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Table 3-16 Applicants Response to Twineham Parish Council [RR-406]

Ref	Relevant representation comment	Applicant's response
2.26.1	The Bolney National Grid substation, to which the cable for Rampion 2 will be connected, lies in the Parish of Twineham. Residents of Twineham Parish have already endured the very badly run contract for the construction of the Rampion 1 substation, located in the Parish of Twineham, together with the cable route. Construction work lasted for 6 years (September 2014 - September 2020), rather than the projected 28 months. Frequently there was weekend and Bank Holiday working, together with work starting in the early morning and going on until 9.20 pm in the evening throughout one summer. Twineham Parish Council would be grateful if it could be made a Requirement (Condition) that working hours are 8.00 am - 6.00 pm Mondays - Fridays and 8.00 am - 1.00 pm on Saturdays and absolutely no working on Sundays or Bank Holidays. Further conditions must be imposed to ensure all vehicles should be fitted with "white noise" and not reversing beepers. We also have concerns regarding the amount of traffic in connection with this construction project and its impact on local residents.	The assessment for Rampion 2 in **Chapter 21: Noise and vibration, Volume 2** of the Environmental Statement (ES) **[PEPD-018]** is based on the core construction working hours of 07:00 to 19:00 Monday to Friday and 08:00 to 13:00 hours on Saturday. No significant effects have been identified in the assessment of construction noise and vibration. The Applicant considers that on this basis the proposed working hours are acceptable. These working hours are detailed in Section 4.4 of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** along with other activity specific requirements including continuous working for trenchless crossing secured via Requirement 22 of the **Draft DCO** **[PEPD-009]**. As stated in response to reference 2.24.3 (above), working hours are stated in Section 4 of **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** and are outlined in Section 4.4 of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**. Following receipt of Relevant Representations and information shared at Issue Specific Hearing 1, C-22 within the **Commitments Register** **[APP-254]** has been updated at the Deadline 1 submission to the following: Paragraph 5.4.8 of the **Outline CoCP** **[PEPD-033]** details the best practicable means that Contractor(s) will adopt (as appropriate to the planned works) to minimise noise during construction. This includes best practicable means to ensure avoidance of unnecessary engine revving, avoidance of reversing, where practicable, and fitting of low noise reversing warnings to pertinent vehicles. The likely significant transport effects of the construction phase of the Proposed Development have been assessed in detail within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**. The implementation of embedded environmental measures (such as the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035]** secured via Requirement 24 of the **Draft DCO** **[PEPD-009]**), no significant effects have been identified in relation to transport receptors.

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Table 3-17 Applicants Response to John Goring on behalf of Wiston Parish Council [RR-421]

Ref	Relevant representation comment	Applicant's response
2.27.1	Lack of consultation. Not listening to local parish councils and communities. Very poor communication with landowners over whose land the proposed route would cross.	The Applicant undertook an extensive programme of consultation and engagement with local people, landowners and statutory bodies prior to the submission of the DCO Application. The **Consultation Report** **[APP-027]** describes how the Applicant has had regard to this feedback, including the many changes made to the project as a result. Engagement with landowners continues and is additionally documented in the **Land Rights Tracker** **[PEPD-016]**.
2.27.2	Not trying to minimise disruption to farmers and rural households.	The project has embedded mitigation in its design to reduce disruption to communities along the cable route; these are listed in the **Commitments Register** **[APP-254]**.
2.27.3	Not properly scoping alternative routes.	Five different grid connection points combined with multiple possible landfall locations were considered to scope alternative onshore cable routes, reported in sections 3.3 and 3.4 of **ES Chapter 3 Alternatives** **[APP-044]**. Within the Climping to Bolney route selected, a number of alternative routes were developed, many arising from community and landowner feedback, and consulted upon; these are described in section 3.4 **of ES Chapter 3 Alternatives** **[APP-044]**.

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Table 3-18 Applicant's Response to Washington Parish Council [RR-413]

Ref	Relevant representation comment	Applicant's response
2.28.1	This representation is made by Washington Parish Council representing the local community in our area. The Parish Council is separately the Charity Trustee of the Washington Recreation Ground which is a protected Green Space in the made Storrington & Sullington and Washington Neighbourhood Plan, and a registered Community Asset. The Parish Council as Trustee will register separately as an Interested Party. Nothing in this representation should be taken to prejudice the position of the Trustee in any future negotiations. The Parish Council does not oppose the principle of the development but considers that the proposed route causes unnecessary and avoidable impact on Washington village and its residents. We made representations during the consultation process in support of the more southerly alternative Route A for the cable, which avoids the village. We have never been provided with a proper explanation as to why this is not viable or seen an evaluation of the costs/benefits in comparison to the proposed Route B. We are also concerned about the options proposed for the location of a construction compound adjacent to the village which would serve the whole of the central part of the project area. It is impossible for us to comment more specifically since we have not been informed of the final site selection prior to the DCO submission – something we find discourteous and unhelpful. As indicated above, our concerns arise in part from what we do know about the proposed route and its potential impact, and in part from the absence of detailed information provided by the applicant. We intend to participate constructively in the DCO Inquiry and we look to the Examining Authority to ensure that the applicant is required to provide detailed and comprehensive evidence which is then thoroughly tested before any decision is reached. The Parish Council's principal issues of concern are as follows.	The Applicant has been in regular correspondence with the Clerk of Washington Parish Council and has welcomed feedback on the evolving design process. regularly engaged with Washington Parish Council, including several meetings with the council to explain the proposals under consultation. We are grateful for the responses from the Parish, and have demonstrated our regard for them in the **Consultation Report** **[APP-027]**. Issues raised by Washington Parish are responded to directly in Appendix 11 **[APP-030]**. The Applicant has considered options for the cable route that avoid the underground crossing of the Washington Recreation Ground, including the 'southerly alternative' requested by the Parish Council. The option was not presented or commented on in the Alternatives Chapter as it was deemed less suitable on technical engineering and environmental grounds, specifically in relation to the pinchpoint of the proposed route crossing a gas pipeline in the vicinity of ancient woodland. Constrained access from the A24, and the need for existing tracks forming the South Downs Way to be widened, with impacts on hedgerows was a further key factor. The Applicant attended and presented feedback on this decision at the Washington Parish Council meeting on the 7 November 2022. Four temporary construction compound (TCC) locations were considered in the Washington area, following the Scoping stage of the project. Following further engineering design review, environmental and land reviews, these were refined to the three alternatives presented at PEIR (RED 2021), Washington TCC Option D, Washington TCC Option E and Washington TCC Option F were consulted on as part of the first Statutory Consultation. Following PEIR (RED 2021), further design progress, including designs for trenchless crossing locations, land owner and stakeholder feedback and further environmental appraisals, reviewing impacts such as traffic, were taking into consideration. This enabled further refinement of options, and resulted in Washington TCC Option D, - renamed as 'Washington Temporary Construction Compound', as the chosen option in this location for the DCO Application submission.
2.28.2	Traffic and Road Safety: Despite our requests Rampion Extension Development (RED) has not confirmed its preferred location for the construction works compound (one of only three or four for the entire project) which it would appear will be located in or near our parish. We recognise that this will be identified in the final submission but it would have been helpful and considerate for RED to engage with the community more openly on this matter. We raised serious concerns in our consultation responses about any option being considered for a compound adjacent to the working quarry at Rock Common and the impact of additional traffic in this location accessing the A283. These concerns are compounded by the possible impact of restoration proposals at the quarry, and by the delay to the programming of delivery of the A27 Arundel Bypass. We consider that the impact of additional HGVs and traffic which may be generated by the construction process has not yet been properly assessed and could have an adverse effect on local road network and access points. There could be significant additional pressure on the A24 Washington roundabout which receives traffic from Steyning on the A283 (east), from Ashington and Horsham on the A24 (north), Worthing and Findon (south), and Storrington on the A283 (west). The parish is near Storrington which is an Air Quality Management Area and any additional construction related traffic passing through this	The Temporary Construction Compound in Washington is located north of the A283 approximately 300m east of the A24 / A283 Washington Roundabout as shown on Sheet 22 of the **Onshore Works Plans** **[PEDP-005]**. The likely significant transport effects of the construction phase of the Proposed Development have been assessed within **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]**, **Chapter 32: ES Addendum, Volume 2** (Document reference: 6.2.32) (submitted at Deadline 1) and in **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[APP-197]** which has been updated at the Deadline 1 submission. Based on the peak week sensitivity test used within **Chapter 32: ES Addendum** (Document reference: 6.2.32) (submitted at Deadline 1), a worst-case HGV flow will occur in week 87 of the construction phase where the Proposed Development will generate 44 Heavy Goods Vehicles (HGVs) and 91 Light Goods Vehicles (LGVs) per day at Receptor 17 (A283 east of the A24). In addition, the worst-case overall increase in traffic will occur in week 85 where there will be 43 HGV and 114 LGVs per day. Noting that construction traffic movements will

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Ref	Relevant representation comment	Applicant's response
	area would be unacceptable. We ask the Examining Authority to test the proposals thoroughly taking into account local knowledge and concerns as well as the 'higher level' assessment made by the highway authority.	occur across the hours of 07:00-19:00 each day (see paragraph 8.4.13 of the **Outline CTMP [PEPD-035a]**), this is the equivalent of approximately 3-4 HGVs per hour and 9-10 LGVs per hour. It is therefore not anticipated that this construction traffic will have a material impact on the operation of the Washington Roundabout. It should also be noted that he A283 west of the A24 is a construction traffic route only as far as access A-33 and A-35 as defined in the **Outline CTMP [PEDP-035a]**. Construction HGV traffic associated with the Proposed Development will therefore not be permitted to travel through the Storrington Air Quality Management Area.
2.28.3	Potential impact on Ecology and the Local Environment: We are concerned that it has not been possible, using the information provided so far, to properly evaluate the full ecological/environmental impact of the cable route adjacent to and through the Washington Recreation Ground, which has a number of mature trees and hedgerows. RED has provided bland assurances that there will be no 'above ground' impact either during construction or in the longer term but we have not been satisfied with the information or level of detail provided thus far. The recreation ground is a vital community asset and important to the setting of the village and it is imperative that no harm is done either during installation or future maintenance to its existing landscape value. Our position is that this is best and most easily achieved by avoiding the area entirely but given that the application has not proposed to do so, these impacts become critical in determining whether the proposal is acceptable.	Instead of open-cut trenching, trenchless crossing of the cables under the Washington Recreation Ground avoids any surface construction works at this location. It is an environmental mitigation measure that has been applied specifically to minimise the effects on the Washington Recreation Ground. The trenchless crossing also passes under the A24 and the A283. The trenchless crossing is secured in Appendix A: Crossing Schedule of the **Outline Code of Construction Practice (CoCP) [PEPD-033]** which is secured through Requirement 22 of the **Draft DCO [PEPD-009]**. This means there will be no surface construction works between the A24 and London Road. In this location, pedestrian access will be required to monitor the head of the drill using hand held equipment only and this is consistent with the approach at Sullington Hill Local Wildlife Site outlined in paragraph 5.6.24 of **Outline Code of Construction Practice [PEPD-033]**. To summarise the key local potential environmental effects that Washington Parish Council may have concerns about: Regarding the vegetation in the vicinity of Washington, the retention of hedgerows is confirmed in Figure 7.2.1f (B) Hedgerow retention and treeline retention plan; the retention of woodland is confirmed in Figure 7.2.2d Woodland retention plan and the retention of scrub is on the Figure 7.2.3g Scrub retention plan. The figures outlined above are located in the **Outline Code of Construction Practice [PEPD-033]**. Section 21.9 of **Chapter 21: Noise and vibration, Volume 2** of the ES **[APP-062]** outlines the assessment of trenchless crossings, the Washington Compound, and use of accesses. Effects in Washington range from negligible to minor adverse which are temporary and Not Significant in EIA terms. The embedded environmental measures related to noise and vibration during construction are provided in Section 5.4 of the **Outline Code of Construction Practice (CoCP) [APP-224]** which is secured through Requirement 22 of the **Draft DCO [PEPD-009]**. This includes the application of Best Practicable Means to mitigate noise and vibration during construction. For example, the use of acoustic cladding or shrouds for equipment related to trenchless crossings including during continuous working hours. A stage specific Noise and Vibration Management Plan (as part of the stage specific CoCP to be approved by the relevant planning authority) will include the detail of this mitigation for the planned works in Washington and also any monitoring required. Section 19.9 of **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]**, outlines the assessment of emissions from construction equipment, construction traffic and dust emissions during construction in Washington. Effects are predicted to be temporary and negligible to minor adverse, which are Not Significant in EIA terms. The embedded environmental measures related to air quality and dust during the construction phase are provided in Section

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		5.3 of the **Outline CoCP** **[APP-224]** which is secured through Requirement 22 of the **Draft DCO** **[PEPD-009]**. Best practice air quality management measures in accordance with industry guidance will be applied in the Washington area, assessed as being at medium risk from dust impacts. This will include a detailed in a Dust Management Plan (as part of the stage specific CoCP to be approved by the relevant planning authority). This includes dust control and inspection and corrective action requirements. **Chapter 17: Socio economics, Volume 2** of the ES **[APP-058]** includes assessment of the Washington Recreation Ground and allotments. The primary embedded environmental measure is that the onshore cable corridor will be installed by trenchless means in this location, avoiding construction works on these grounds, and therefore, there is a negligible residual effect which is Not Significant.
2.28.4	Horizontal Drilling Compounds: RED has proposed to mitigate the impact of the route by using Horizontal Directional Drilling to install the cable under the recreation ground and adjacent land. Despite our requests we have not been provided with detailed information about the large compounds required at each end of the drilling site on the east side of the A24. We ask that the Examining Authority specifically investigates the nature and impact of the drilling operation, its duration and what measures will be taken to minimise the disturbance to local residents and to normal use of the facilities.	The area to the east side of the A24 is one of four construction compounds that will serve the wider onshore cable corridor. The **Statement of Reasons** The area to the east side of the A24 is one of four construction compounds that will serve the wider onshore cable corridor. The **Statement of Reasons** **[APP-021]** provides an outline of requirement and description of uses for the temporary construction compounds in Paragraph 6.10.5: *"Temporary Construction Compounds will comprise of a hardstanding and a perimeter fence and will be used for the storage of plant and machinery and the stockpiling of materials, as well as for the provision of site management offices, parking, and welfare facilities for construction personnel (kitchen facilities, storerooms, toilets) in accordance with Health and Safety and Construction Design and Management Regulations"".* The function and maximum parameters of the compounds are described in **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-044]** at Table 4.22. The **Onshore Works Plans Sheet 1** **[PEDP-005]** confirm that this construction compound directly adjoins the cable corridor where there are two indicative trenchless crossing compounds (TC16 and TC17). Paragraph 4.5.27- 4.5.29 in **Chapter 4 The Proposed Development, Volume 2** of the ES **[APP-044]** set out what trenchless crossing compounds entail. The Applicant is seeking consent using a 'Rochdale envelope' approach, constrained by worst case parameters. These are described in Section 4.5 of **Chapter 4: The Proposed Development, Volume 2** **[APP-045]**. Detailed specifications for trenchless crossing compounds and drilling methods are not available prior to the appointment of a contactor. However, measures to mitigate the effects of the Proposed Development are set out in the **Outline Code of Construction Practice** **[PEPD-033]**. There is no need (nor is any provision sought) to close the recreation ground to implement a trenchless crossing underneath it. The Environmental Statement has assessed the effects of each compound for during construction. Though impacts will arise, there are no significant effects arising from noise, dust, ecology, Public Rights of Way and traffic impacts when considering the embedded environmental measures secured in the **Outline Code of Construction Practice** **[APP-224]** (CoCP), the **Outline Construction Traffic Management Plan** **[APP-228]** (CTMP) and the **Outline Public Rights of Way Management Plan** **[APP-230]** (PRoWMP). The Applicant acknowledges that significant landscape and visual effects associated with the presence of

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Ref	Relevant representation comment	Applicant's response
		the compound but these are temporary and reversible when the commitment to reinstatement in the **Outline Landscape and Ecology Management Plan [APP-232]** (LEMP) is considered. It is noted that each of the above plans will be subject to submission of stage specific details for approval by the relevant authority including WSCC for the CTMP and PRoWMP and the relevant planning authority for the CoCP and LEMP. This is as per the **draft DCO [PEPD-009]** Requirements 24, 20, 22 and 12 respectively.
2.28.5	Future use of the Recreation Ground: It is essential that the future use of the recreation ground by our community is not compromised or put at risk by the presence of the supply cable at any point during its lifetime. This is best achieved by routing the cable elsewhere and therefore avoiding the recreation ground altogether. However, acknowledging that this is not the current proposal, we believe it is essential to have complete reassurance that the presence of the cable can be effectively 'forgotten' for all practical purposes in the use, maintenance and repair of the recreation ground, with no constraints or requirements to seek consents from the cable owner for routine operations. We are also concerned that it should not prejudice the future extension of facilities, such as the sports pavilion, at the recreation ground. We cannot accept a situation where the presence of the cable becomes the most important determinant of how and when our community makes use of its own recreation facilities.	Following completion of the works, usual maintenance activities can be carried out. Activities such as mowing and grounds maintenance can therefore be undertaken over the easement area. The area of the recreation ground is affected by Works No.9 – Cable Installation works (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. The proposed future easement will therefore impose some covenants on the ground directly above the easement strip. These are detailed within the Option and Easement documentation and include, 'not to erect, construct or place any building or structure on the Cable Strip without the previous consent in writing of the Grantee'. The Applicant understands there are currently no planning proposals to extend any part of the sports pavilion or tennis courts on the recreation ground.
2.28.6	Consultation process: We have made repeated requests for clearer and more easily understood maps and plans to aid community understanding of the proposals. We recognise that there is an evolving design process. However, the sheer volume of material produced by the applicant has often made it difficult for us to be clear about the proposals and their potential impact. In some cases options are put forward for consultation with no subsequent explanation as to how a final selection has been made – for instance in relation to construction compounds. The volume and presentation of material has also obscured the location or impact of elements of the scheme or its chronology. The applicant has constantly advised that details of the final proposals will become available when the DCO is submitted which may be true but is unhelpful and not in the spirit of good public engagement. At the public meeting held in September 2021 we (meaning the residents of our community) asked the developer to reconsider a route which avoids the middle of the parish and the village. The community asked that serious consideration be given to reverting to the original preferred Route A option south of the village, about which Wiston Estate later provided significant supporting information. Our concerns were raised in the written responses to the 2021, 2022 and targeted 2023 consultations, with a request that the other route option, which would avoid the village, is robustly evaluated. There is no evidence that this has been done nor has the Parish Council received a satisfactory response to its requests for additional information. It is therefore no surprise that residents feel let down by the consultation process. This is one of the key issues that we hope the Examining Authority will investigate during the Inquiry.	The Applicant has addressed this matter under the response to **reference 2.28.1** above.
2.28.7	Funding arrangements for Professional Fees: The Parish Council (as community representative) also wishes to raise the concern that landowners, such as the Parish Council as Trustee, are faced with a developer's cap on the reimbursement of professional fees. The effect of this is to limit their ability to properly consult an agent for advice or to take legal advice in relation to property interests. There is no justification for residents of our small	The Applicant has provided written confirmation to the Clerk of Washington Parish Council that 'fees reasonably and properly incurred will be paid within 28 days of receipt of a properly addressed invoice' in respect of a survey licence.

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Ref	Relevant representation comment	Applicant's response
	community being required to pick up a large bill so that it can deal with a property matter which is entirely of benefit to a commercial entity. We urge the Examining Authority to ensure that this cap is removed and that all reasonable costs are reimbursed by RED.	The Applicant understands that the Parish Council does not want to progress with signing Heads of Terms on the basis that their constituents' preferred route to the south of Washington was not taken forwards. Should the Land Interest wish to progress discussions on Heads of Terms, reasonable fees are offered to cover landowner's costs. Reasonable fees are paid on an hourly rate, to be agreed, there being a requirement upon the Land Interest to inform Carter Jonas where fees are to exceed the figures stated in the Heads of Terms, so a decision can be made as to how to proceed.
2.28.8	Conclusion: These issues are all material to the DCO process. The Parish Council has a specific interest as a community representative to participate in the Inquiry and looks forward to being given the opportunity to raise these matters as an Interested Party.	The Applicant has no further comments on this matter at this time.

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Table 3-19 Applicant's Response to Andrew Griffith Member of Parliament for Arundel and South Downs [RR-016]

Ref	Relevant representation comment	Applicant's response
2.29.1	I am writing in my capacity as Member of Parliament for Arundel and South Downs to register as an Interested Party in relation to RWE's application for the construction of the Rampion 2 Offshore Windfarm and its associated infrastructure, specifically the proposed Onshore Cable Corridor. I am registering as an Interested Party so I am able to share the views of the residents I represent in relation this application. The majority of the 40km cable route runs through parishes in my constituency, across the Arun and Horsham districts, from Lyminster in the south, through to the substation at Bolney and the proposed new substation at Cowfold. To reiterate what I have set out in my previous submission to you, it is my view, and the view of affected residents, that the cable corridor will be hugely damaging to communities and wildlife habitats within the special landscape of the South Downs during its construction phase. There is clear concern around the expectation that its construction will disrupt households and businesses in West Sussex for many years. I have been engaged with the Rampion 2 windfarm since their first indication of intention to construct the project. I responded to the initial RWE consultation on 16th September 2021 to share my views and those concerns which had been raised to me. I did so again on 29th November 2022 with a second submission which focussed purely on the Onshore Cable Corridor route (OCC). These views are based on deep local knowledge, my meetings with impacted landowners, parish councils and communities, and a high level of correspondence from concerned residents who understand the considerable impact the build phase will have on their local landscapes and roads. There is also considerable concern about the inadequacy of the consultation process and lack of proper consultation materials to respond to, with the detailed maps only being published as part of the examination process. I separately wrote to you about this on 6th September 2023 and these are points I wish to make again as part of my full written representation.	Various options were considered for connecting the offshore wind turbines to the national grid, which are discussed in Section 3.3 and 3.4 of **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**. Given the distance between the grid and the coast, a lengthy cable is required, but the Applicant considers the selected route to be the preferred based on its extensive consideration of options. Disruption to local people and the environment has been assessed in the Environment Statement and should be weighed against various other factors including climate change benefits (as the disruption to people is different in different locations where the cable route location has been influenced by environmental considerations) of the Proposed Development. The **Planning Statement** **[APP-036]** concludes that the Proposed Development accords with government policy as set out in relevant National Policy Statements. The Proposed Development has been subject of multiple rounds of iterative consultation with local people, statutory and non-statutory bodies. This process, and evidence of regard had to consultation responses, is set out in the **Consultation Report** **[APP-027]**.
2.29.2	There are significant and well-founded concerns regarding the impact of additional construction vehicles on existing local traffic and access, particularly at the Cowfold section, and at the Washington roundabout which is close to Sullington and Storrington. Both Cowfold and Storrington are Air Quality Management Areas, the latter with vehicle weight restrictions in place. Added to this are concerns about the proximity of the route to residential properties and areas of environmental sensitivity. Progress on across the whole project up to date has already caused blight, and has burdened landowners and parish councils with unreasonable costs as a result of the need to employ professionals to fully survey the properties and land impacted so that they can respond in full to each stage of the process.	The temporary effects of construction traffic are assessed in **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064],** which concludes no significant effects on transport receptors within the centre of Cowfold, Sullington or Washington following the implementation of embedded environmental measures such as the construction traffic routing prescribed within the **Outline Construction Traffic Management Plan (CTMP)** **[PEDP-035a]**. To limit the effects on the Cowfold and Storrington, a number of commitments have been made by the Applicant as detailed within the **Commitments Register** **[APP-254]** and secured through **Outline CTMP** **[PEPD-035a]** secured via Requirement 24 of the **Draft DCO** **[PEPD-009]**. This includes: • Commitment C-157: The proposed HGV routing during the construction period to individual accesses will be developed to avoid major settlements of Storrington, Cowfold, Steyning, Wineham, Henfield, Woodmancote and other smaller settlements where possible; and • Commitment C-158: The proposed HGV routing during the construction period to individual accesses will avoid the Air Quality Management Area in Cowfold where possible.

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Ref	Relevant representation comment	Applicant's response
		Further information related to the assessment completed in Cowfold and details of assessments undertaken on the A283 west provided **in references 2.17.3 and 2.25.3** respectively above. The Applicant has not received any Blight Notices nor does it anticipate that any persons would meet the statutory criteria to do so. This is covered in section 3 of the **Funding Statement** **[APP-025]**.
2.29.3	Summary of representation I wish to summarise my representation regarding the onshore cable corridor (OCC) and will provide further detail in my full written representation when requested to do so. As the Member of Parliament for Arundel and South Downs, I represent the constituency which is most impacted by the proposed OCC. Whilst I am wholly supportive of renewable energy and an expansion of offshore wind, my view remains that this is the wrong project in the wrong place. Much of the route is proposed to cut through vast swathes of the delicate chalklands in the South Downs. Area 2 and Area 4 – Lyminster to Sullington Hill, Area 5 – West and North of Washington, Area 6 – Wiston to Kings Lane, and Area 7 – Substation Approach, all fall within Arundel and South Downs.	The Applicant has no further comments on this matter at this time.
2.29.4	I share the view of Cowfold residents that the decision to site the new substation at Oakendene has lacked the much needed input from the communities most impacted because they were not properly consulted. There has been little consideration for the impact that RWE construction works will have on the flow of the A272 traffic – a road which is already one of the most dangerous in Sussex.	The likely significant transport effects of the construction phase of the Proposed Development has been assessed within **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]**. The **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** contains details of required construction traffic routing for the Proposed Development. Where possible HGV traffic has been routed via the A23 and from the east along the A272 avoiding Cowfold. HGV traffic has been minimised as much as possible as detailed paragraph 1.2.5, Commitment C-157 and C-158 **Commitment Register** **[APP-254]**. Furthermore, the **draft Development Consent Order** **[PEDP-009]** includes a requirement (Requirement 24) to submit a stage specific CTMP (which accords with the **Outline CTMP** **[PEPD-035a]**) for approval by the highway authority in consultation with the relevant planning authority before that stage can commence. Further information related to assessment completed for Cowfold is provided in **reference 2.17.3** above.
2.29.5	Oakendene's location - away from the existing substation at Bolney – will require additional cable routing as well as a substantial industrial development, the construction of which will bring a heavy burden of even more traffic onto an already congested road. The proposed new substation will be an industrial eyesore which is visible from Kent Street, an otherwise rural lane, and any tree planting to obscure its visual impact will realistically take many years to mature. I have heard from affected residents in several parishes who say that there has been a notable lack of information and consultation.	Please see the Applicant's response to **reference 2.29.4** above. The onshore substation at Oakendene will be well screened by existing vegetation which will be retained. Consequently, it has a limited ZTV as indicated in **Figure 18.2a, Volume 3** of the ES **[APP-098-103]**. The Indicative Landscape Design for the onshore substation at Oakendene and its design principles are set out in the **Design and Access Statement** **[AS-003]** and further expanded on in the **Outline Landscape and Ecology Management Plan (LEMP)** [**APP-232**]. This will provide further screening and includes design principles committing to maximising

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Ref	Relevant representation comment	Applicant's response
		opportunities for advanced planting. The outline layout design shows a curved approach road to the substation, so that direct views can be screened by landscaping. Design elements within the LEMP will be secured and developed through Requirements 12 and 13 of the **Draft DCO** **[PEPD-009]** and Commitment C-196 of the **Commitments Register** **[APP-254]**.
2.29.6	I share the views that the documentation from RWE's online consultation was overtly convoluted and incomprehensible for a layperson. Even the most technically literate readers struggled to properly evaluate the full ecological and environmental impacts from the information provided. I am quite sure that the lack of proper non-technical summaries will have discouraged a large number of potential respondents from engaging with the consultation.	As development for which an Environmental Impact Assessment is required, the Applicant has published a Preliminary Environmental Impact Report of a sufficient degree of detail and complexity to meet the regulations. However, these were accompanied by Non--Technical Summaries to inform the lay reader. Further, environmental impacts were also summarised within the consultation document and website, demonstrated in the **Consultation Report** **[APP-027]**.
2.29.7	A number of residents have also voiced their concerns that they were unaware of Oakendene being an option for the substation and would like to have had an earlier opportunity to feed in local knowledge before a decision was taken. I will continue to be supportive generally to the expansion of offshore power, but I remain unmoved from my original position in pointing out the well-justified concerns that so many residents in the South Downs have regarding the cable corridor and the location of the substation project. It continues to be my long-held view that the North Sea offers far better opportunities to expand the UK's low carbon renewable energy. You will have received a number of responses to this current stage of the Examination process, and many will have come from my constituents and parish councils. The consultations have been very poor indeed and I do not think meet the standards required to progress with the Development Consent Order application. I would be grateful if you could include my comments in your consideration and I associate myself with any comments submitted by the local councils. I associate myself with their submissions and ask that you consider each response carefully and respect the local knowledge they share. I look forward to being invited to make full and detailed representation in the next Stage of your examination process. Andrew Griffith MP	The Applicant has held extensive rounds of public consultation where local residents were able to provide feedback on the proposals. In addition to public consultation, the project team held a dedicated public event on 21 June 2023 for the Cowfold community, close to the proposed Oakendene Onshore Substation site for the Project. The consultation procedure undertaken by the Applicant for Rampion 2 has met the requirements for consultation that are specified in the Planning Act 2008 as confirmed by the acceptance of the DCO Application. Further information on the consultation undertaken by the Applicant can be found in the **Consultation Report** **[APP-027]**. This event was attended by 140 people and responded to concerns about the level of engagement. The Cowfold Information Event was advertised on posters locally, on community Facebook pages and through a targeted maildrop to everyone within 1km of the proposed Oakendene substation site and the main Cowfold conurbation. The Parish Council also helped promote the event and attended in person. Further information on public consultation and engagement with the local community can be found within the **Consultation Report** **[APP-027]** **Section 3.4**. The proposed location of the project was also subject to non-statutory consultation (14 January to 11 February 2021) and statutory consultation (14 July to 16 September 2021, plus extension 7 February to 11 April 2022). From 2021 to 2023, the applicant delivered five rounds of adequate public consultation. Table 1.1 in Section 1 of the **Consultation Report** **[APP-027]** summarises which consultation stages consulted under section 42 of the Act. Each relevant section covering a consultation stage then covers the details of that consultation (section 5.3, 6.3, 7.3, 8.3, 9.3 and 10.3). Sections 5.4 and 6.4 of the Report cover notification under section 46. Copies of the notifications can be found in Appendix 4.5 and 6.5.

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Ref	Relevant representation comment	Applicant's response
		Section 47 consultation, in accordance with section 47 of the Act, a draft Statement of Community Consultation was developed by the Applicant (section 5.5 and appendix 4.1). Details of the process are presented in this section of the consultation report. Sections 5.6 and 6.6 presents how the Applicant publicised the proposals in the 'prescribed manner' in accordance with section 48. Copies of the notices can be found in Appendices 4.6 and 6.6. To demonstrate compliant with section 49, the duty to take account of responses, each consultation stage has a dedicated 'responses to the consultation' section in the appendices. Annexes 1, 2 and 3 present detailed summaries of issues raised at consultation and the project's official response.
2.29.8	I am writing regarding the DCO for RWE's Rampion 2 offshore windfarm which includes plans to build a 40km cable motorway through communities within the Arun and Horsham Districts and across the South Downs National Park protected landscape. In places, this cable motorway will be up to 50 metres wide. It will be hugely damaging to communities within Arun and Horsham districts and its construction phase alone is expected to disrupt households and businesses in West Sussex for many years. Whilst I am supportive of renewable energy in general and offshore wind in particular, there are many other and better sites around the UK's coastal waters which benefit from greater wind and where the onshore cable motorway can be constructed without the issues presented by the denser communities of the Arun valley or our very special natural landscape.	The selection process for the cable route is fully described in Environmental Statement (ES) **Chapter 3: Alternatives, Volume 2 [APP-044]** Engagement and consultation undertaken for the project have informed the assessment work and the evolution of the design of the Proposed Development. Construction activity will be planned to minimise disruption to residents and businesses in the local area. An **Outline Code of Construction Practice (OCoCP) [PEPD-033]** has been prepared to secure the embedded environmental measures that will apply to all activities associated with the construction of the onshore elements of the Proposed Development. The production of detailed CoCP is secured via Requirement 22 of the **Draft Development Consent Order [PEPD-009]**. This will confirm the width of the cable corridor. In relation to the location of the project, please see the Applicant's response to reference 2.29.7.
2.29.9	I do not believe that RWE have delivered an adequate consultation at all – a view which is widely shared by the villages most impacted and which you will be aware of from the representations shared through the process. RWE have obfuscated the process by providing a poor standard of information and public engagement. The maps they have provided have lacked the detail needed for most residents to make an informed assessment of the route. There has been a comprehensive failure to engage properly with those landowners, businesses and residents affected. All of these are points which I have already made in my own detailed submissions to both consultations on behalf of my constituents. I am deeply disappointed by RWE's lack of real engagement or interest in the views of my constituents with landowners commenting that they have struggled to engage with RWE and their agents. Lyminster Parish Council have advised that they also consider the level of RWE's public engagement and information to be inadequate. They said that members of their community have previously responded to the consultation exercise yet their views appear to have been disregarded in some of the latest proposals. Namely routes traversing higher quality farming land. In the Horsham District, the parishes of Cowfold, Ashurst, Wiston, Washington and Sullington are all impacted by the Onshore Cable Corridor route (OCC).	The Applicant undertook a range of Statutory and non-statutory consultations including both in-person events and online consultations in which it engaged with the wider public as set out in the **Consultation Report [APP-027]**. The statutory and non-statutory consultations included visualisations of the Proposed Development, in order to allow the public to understand its appearance and visual impacts from the initial early design and throughout the design evolution. To enable easy access to the consultation proposals across a 40km cable route, the Applicant created an interactive map at the top of the webpage, allowing the visitor to select cable route areas from 1 – 7 to investigate the area most local to, or of most interest to them. The 7 areas are also recognisable via geographical references and place names. Upon clicking a cable route area, it was then broken down further into smaller sections e.g. a) b) c) etc, again easily identifiable via geographical references and place names. The consultation procedure undertaken by the Applicant for Rampion 2 has met the requirements for consultation that are specified in the Planning Act 2008 as confirmed by the acceptance of the DCO Application. Further information on the consultation undertaken by the Applicant can be found in the **Consultation Report [APP-027]**.

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Ref	Relevant representation comment	Applicant's response
2.29.10	In Cowfold, residents have been able to demonstrate that they were not informed of the proposal to locate the Rampion substation at Oakendene Farm until the second consultation. Complaints have been raised directly to Rampion, including from Cowfold Parish Council, regarding the lack of consultation materials for residents. Those residents who would be most affected by the substation and the OCC route were not in receipt of the proper notices in advance of the second consultation. The residents had just weeks to respond to the consultation and the new information which did not give them time to collate the ecological and geographical information needed to evidence their objections, and this is of great concern. I think this serious lack of engagement will have had some impact on the level of response to the consultation, in a village that will have the only lasting overground infrastructure as part of the Rampion project.	The Applicant has held extensive rounds of public consultation where local residents were able to provide feedback on the proposals. The consultation procedure undertaken by the Applicant for Rampion 2 has met the requirements for consultation that are specified in the Planning Act 2008 as confirmed by the acceptance of the DCO Application. Further information on the consultation undertaken by the Applicant can be found in the **Consultation Report** **[APP-027]**.
2.29.11	Cowfold Parish Council wrote to Rampion in January 2023 to state that they also consider the level of RWE's public engagement and information to be inadequate. The Parish Council called for a fresh period of consultation for the parish of Cowfold, given the identifiable failures of communication. This request was not agreed to. The parish council also highlighted the lack of detail and clarity in the maps provided. A common theme throughout my constituency in areas which are impacted by the Onshore Cable Route.	Please see the Applicant's response to **reference 2.29.7** above.
2.29.12	Washington Parish Council also wrote to RWE in the second consultation to express their dissatisfaction with the consultation and engagement. They also highlighted the technical level of the documents which were unfathomable for the majority of residents. They stated: "Route and access plans in particular have been produced in such a way that it is difficult to identify the underlying map information."	Please see the Applicant's response to **reference 2.29.9** above.
2.29.13	In a recent meeting between Wiston Parish Council and RWE to discuss the final route, one landowner pointed out to RWE that they did not appear to have given the alternative route any serious consideration. RWE said that they "could not really recall any detail about the alternative Southern route". This further demonstrates the RWE Project directors' lack of assessment of information during the consultation phase.	The Applicant has considered options for the cable route including the 'southerly alternative'. The option was not presented or commented on in the Alternatives Chapter as it was deemed less suitable on technical engineering and environmental grounds, specifically in relation to the pinchpoint of the proposed route crossing a gas pipeline in the vicinity of ancient woodland. Constrained access from the A24, and the need for existing tracks forming the South Downs Way to be widened, with impacts on hedgerows was a further key factor. **Consultation Report** **[APP-027]** **Annex 2 Application Reference 5.1.2** presents detailed summaries of issues raised onshore at consultation and the project's official response.
2.29.14	The most recent proposals for the OCC, which were consulted on in October/November last year, were a significant departure from the original ones proposed. Rampion's PR company emailed notice of the DCO submission 10 days after it was submitted, sending their email on 18th August to state the DCO had been submitted to the Planning Inspectorate on the 10th August.	Having listened to feedback from the statutory project-wide consultation alongside the results of ongoing environmental and engineering surveys, The Applicant considered a number of potential alternatives and modifications to the onshore cable route to help improve the project and reduce impacts. These alternative proposals formed the basis of the statutory onshore consultation held in October and November 2022. The email sent on 18th August was a courtesy communication to stakeholders (during the holiday season), to indicate submission of the DCO application. However, the more formal communication was sent on the morning of 8th September following confirmation of [Planning Inspectorate] Acceptance of the application on 7th September. In this communication, The Applicant summarised the application documents and the next steps under S56 of the

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Ref	Relevant representation comment	Applicant's response
		Planning Act (2008), signposting the Rampion 2 page on the Planning Inspectorate website and setting out how to register as an Interested Party.
2.29.15	In summary, the consultations have been very poor indeed and I do not think meet the standards required to progress with the Development Consent Order application. I would be grateful if you could include my comments in your consideration and I associate myself with any comments submitted by the local councils.	Please see the Applicant's response to **reference 2.29.7** above.

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Table 3-20 Applicant's Response to Rt Hon Jeremy Quin MP [RR-331]

Ref	Relevant representation comment	Applicant's response
2.30.1	Potential impact on constituents.	The Applicant has no further comments on this matter at this time.

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Table 3-21 Applicant's Response to Caroline Ansell MP [RR-055]

Ref	Relevant representation comment	Applicant's response
2.31.1	I write in support of the expansion of the Rampion Wind Farm. I do this in my capacity as the Member of Parliament for Eastbourne and Willingdon. Offshore Wind has been a British success story rapidly rising to become the most significant generator of renewable energy in the UK. It is also an area of increasing British expertise with the world's largest wind farms located in UK EEZ. Just this month, the connection to the grid of what will become the world's largest wind farm at Doggerbank is part of this success story. Whilst not of the same size and scope of these projects, Rampion 1 and 2 will form the largest wind farm on the South Coast and taken together will power the equivalent electricity of all the homes in Sussex. The nationwide target of 50GW of wind power by 2030 will be helped by the additional generation of wind power at Rampion. My constituents of Eastbourne & Willingdon have endured steep rises in the price of electricity and gas this year past. Domestic wind power is therefore mission critical to improve our environment, prevent the volatility of bills and reduce reliance on imports. Estimates that renewables saved £5.9 billion of additional imports suggests energy prices could have been higher without this. This fact also demonstrates the need to continue investing in our renewable capabilities. As we continue to decarbonise the grid – itself essential to meet carbon neutrality ambitions – expanding local wind power will help with new technologies of tomorrow such as hydrogen and powering electric vehicles. I very much hope this project will be successful in securing the necessary planning requirements.	The acknowledgement that Proposed Development will contribute to climate change mitigation is welcomed by the Applicant. The Proposed Development will help meet the urgent need for new renewable energy infrastructure in the UK and supporting the achievement of the UK Government's climate change commitments and carbon reduction objectives. The Proposed Development type is recognised as being a critical national priority in the revised NPS EN-1 (November 2023) and NPS EN-3 (November 2023), for which there is an urgent need to deliver. The assessment set out in **Chapter 29: Climate change, Volume 2** of the ES **[APP-070]** concludes the Proposed Development has a lifetime GHG emissions saving of 35,901ktCO_2e.

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4. Applicant's Response to Relevant Representations: Prescribed consultees

Table 4-1 Applicant's Response to Environment Agency [RR-116]

Ref	Relevant representation comment	Applicant's response
2.32.1	Marine Environment: • We are pleased to confirm we are satisfied with the Water Framework Directive (WFD) assessment provided, which has been provided in a format agreed during pre-application advice in the Environmental Statement Volume 4, Appendix 26.3: Water Framework Directive compliance assessment. • In our view the WFD assessment justifies the proposal's claim for compliance for the marine water quality WFD elements. We are pleased to see that all our potential concerns have been included and adequately addressed. We feel it is clear that there have been lessons learnt from Rampion 1 which have been incorporated and satisfactorily addressed in the WFD assessment. • The release of sediment contaminants was scoped out of the Environmental Statement. However, we have raised concerns about the release of significant quantities of bentonite during the drilling process during the offshore construction phase and the potential impacts to the newly establishing kelp beds in proximity. Assurances were given at the last expert topic group meeting that contact had been made with the Sussex Kelp Recovery Project (SKRP) and discussions / consultation were ongoing. We would welcome further clarification on this.	These comments are welcomed by the Applicant. The Applicant is engaging with Sussex Kelp Recovery Project (SKRP) and SKRP is aware that the Rampion 2 DCO Application has been published on the Planning Inspectorate's website. Whilst the Applicant has not engaged with SKRP on direct impacts on the kelp beds, **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-050]** has assessed all algal features, including kelp, and no significant effects are predicted to occur. Additionally, Section 2.7 of **Appendix 6.3: Coastal processes technical report: Impact assessment, Volume 4** of the ES **[APP-131]** has assessed drilling fluid release during HDD at the landfall and no significant effects are predicted to occur. It is therefore considered unlikely that construction works, including the potential release of bentonite during drilling activities at landfall, would result in the deterioration of relevant biological quality elements under the Water Framework Directive (WFD (England and Wales) Regulations 2017, although it is also noted that the Sussex coastal water body is not assessed / classified for macroalgae.
2.32.2	Landfall: • The cable makes landfall at Climping and will be installed using Horizontal Directional Drilling (HDD) as detailed in the Environmental Statement Volume 2, Chapter 4: The Proposed Development Paragraphs 4.4.1-4.4.15 which makes reference to landfall, construction works and the Transition Joint Bay (TJB). The TJB is to be a permanent below-ground infrastructure where the offshore and onshore export cables are joined and is to be located landward of the beach. • We have previously discussed with the applicant the rapidly changing coastal morphology at the Landfall site. We are confident that references in Environmental Statement Volume 2, Chapter 6: Coastal processes demonstrate that this has been understood by the Applicant. We would urge the Applicant to ensure that they are satisfied that the risk to their equipment is appropriately mitigated. • Further details of the chosen landfall connection and associated work at Climping including details of any flood mitigation will be required. A FRAP will need to be obtained prior to the commencement of such works.	During design evolution of the Proposed Development, a sequential approach and approach of avoidance was taken to siting the landfall options (TC-01 and TC-01a), whereby they were sited topographically on the highest ground in the areas of the least flood risk and landward of the most extreme Environment Agency geomorphological report estimates. Assessment of coastal morphology at the landfall site was undertaken in **Chapter 6: Coastal processes, Volume 2** of the ES **[APP-047]**. Commitment C-247 of the **Outline Code of Construction Practice (CoCP) [PEPD-033]** which is secured through Requirement 22 of the **Draft Development Consent Order (DCO) [PEPD-009]**. Requirement 26 of the **Draft DCO [PEPD-009]** also secures further mitigation to be identified and implemented post-DCO consent as necessary. The 'coastal erosion and future beach profile estimation assessment' will be undertaken by the Applicant prior to construction at the post-DCO award stage as part of the final site selection process, and prior to finalisation of the engineering design. The assessment would be a desktop study, compiled with the latest information available at that time, including: existing studies and estimates of likely coastal erosion patterns and new targeted ground investigation works; the position of the coastline; the state of the beach and hinterland, including any remaining coastal defences; the existing environmental baseline understanding; any updates to the predicted effects of climate change; and any relevant updates to the coastal protection strategy or options being considered for the wider coastal area. Further ground investigation will be carried out at the landfall at the post-DCO Application stage as outlined in commitment C-247 (**Commitments Register [APP-254]** which has been updated at Deadline 1) and secured within Requirement 26 of the **Draft DCO [PEPD-009]**.

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Ref	Relevant representation comment	Applicant's response
		This, in combination with the future beach profile estimation described above, will help identify the need for and design of any further adaptive management mitigation measures to help minimise the vulnerability of assets from future coastal erosion and flooding. During the detailed design stage post-DCO award, the preparation of the Flood Risk Activity Permit (FRAP) application will contain further detailed information. The Applicant will commence this process in advance of any construction works. Commitment C-118 (**Commitments Register [APP-254]** which has been updated at Deadline 1) also commits to an Emergency Response Plan for flood events, which will help effectively protect site personnel and equipment from any risk of flooding from the sea during construction. This is secured in Requirement 22 of the **Draft DCO [PEPD-009].** Additionally, the landfall transition joint bay will be resilient to flooding once constructed as documented in paragraph 4.3.8 of the **Appendix 26.2: Flood Risk Assessment (FRA), Volume 4** of the ES **[APP-216]**.
2.32.3	Crossings, Flood Risk and Flood Risk Activity Permits (FRAPs) Note for the Planning Inspectorate: the Environment Agency has responsibility for protecting designated 'Main Rivers'. Local Authorities are responsible for protecting 'Ordinary Watercourses'. There are both Main Rivers and Ordinary Watercourses along the proposed cable route. The Applicant would separately have to apply for an Ordinary Watercourse Consent from the Lead Local Flood Authority (LLFA) where required.	The responsibilities for protecting designated Main Rivers and Ordinary Watercourses (held by the Environment Agency and Local Authorities respectively) are reflected in the relevant legislation, planning policy and other documentation Section 26.2 of the ES **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**.
2.32.4	The Applicant has acknowledged the requirement to obtain FRAPs from us before commencement of works in, under, over or within 8m of the top of the bank of any designated Main River and 16m from a Coastal Defence. However, we have not yet received any detailed methodology for such works, and therefore are not able to comment on this aspect, nor indicate whether such permits can be obtained, or advise upon any requirements that would be applied to such permits if obtained. It is our understanding that the Applicant does not intend to disapply the need for FRAPs under section 150 of the Planning Act 2008.	Detailed methodologies for works where there is a requirement for a Flood Risk Activity Permit (FRAP) (e.g. works in, under, over or within 8 m of the top of the bank of any designated Main River and 16 m from a Coastal Defence) will be provided by the contactor who will be appointed at the post-Development Consent Order (DCO) award stage. The permitting requirements within embedded environmental measure C-17 are set out in Section 26.7 (Table 26-20) of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**. Other embedded environmental measures are provided which address points made by the Environment Agency in relation to temporary works in the floodplain and flow conveyance including the programming of works, Emergency Flood Response Plans, and temporary haul road and soil stockpiling considerations (Commitments C-117 to C-119, C-130 to C-133, C-154 and C-175 in the **Commitments Register [APP-254]** which has been updated at Deadline 1) which are set out in the **Outline Code of Construction Practice (CoCP) [PEPD-033]** and secured via Requirement 22 of the **Draft DCO [PEPD-009]**. The Applicant confirmed in a consultation meeting with the Environment Agency on 22 June 2023 that it is not intending to disapply the need for permitting under section 150 of the Planning Act 2008.
2.32.5	Should this position change, and the Applicant intends to seek disapplication of the need for FRAPs, then further discussion regarding disapplication of consents for both FRAPs will be required. We would expect methodologies to be provided for our examination (with sufficient time granted for this work) and also recommend that a number of protective provisions are included in the DCO.	As outlined in **reference 2.32.4** (above), the Applicant is not seeking to disapply the need for Flood Risk Activity Permits (FRAPs).

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2.32.6	It has been noted that this has been acknowledged in the latest documentation, but we would recommend that a requirement is included in the DCO, to cover the need for such permits to be obtained prior to works being undertaken.	The requirement for permitting is captured within the embedded environmental measure C-17 as set out in Section 26.7 (Table 26-20) of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**. It is also identified in Table 3-1 in **Other Consents and Licences [APP-033]** which sets out the other consents and licences which will be required in connection with the Proposed Development, such as Flood Risk Activity Permits. Part 4, Article 16 (7) of the **Draft DCO [PEPD-009]** acknowledges that the article does not authorise entry into controlled waters as prohibited by the Environmental Permitting (England and Wales) Regulations 2016. The Applicant will apply for Flood Risk Activity Permits in adherence with the Environmental Permitting (England and Wales) Regulations 2016 as required.
2.32.7	During our pre-application engagement with the Applicant, we advised that our preferred method for crossing a Main River is HDD, as this presents the least risk in terms of flood risk and effects on river ecology. HDD essentially involves drilling underneath the river. An alternative method to cross is open trench cutting, which involves excavating a trench, installing the cable, and refilling the trench. This method poses a much greater risk to the fish, ecology and geomorphology of a river system. We, therefore, prefer to see HDD over open trenching cutting. The documentation has stated that all "Main Rivers" and watercourses considered to provide good habitat for fish are proposed to be crossed by "trenchless crossing" and we require justification for those exceptions. The statement "where this represents the best environment solution, is financially and technically feasible" infers some ambiguity. It would be helpful to have more clarity on this.	Commitment C-5 in the **Commitments Register [APP-254]** (updated for the Deadline 1 submission) states that: "*Main Rivers, watercourses, railways and roads that form part of the Strategic Highways Network will be crossed by HDD or other trenchless technology, in accordance with Appendix A Crossing Schedule of the Outline of Construction Practice.*". For clarity, the Applicant confirms that all Main Rivers will be crossed by trenchless crossing technology as reflected in Figures 26.2a-t of **Chapter 26: Water environment – Figures (Part 1 of 2), Volume 3** of the ES **[APP-117]** as per Appendix A: Crossing schedule and paragraph 5.10.13 of the **Outline Code of Construction Practice (CoCP) [PEPD-033]**. This is secured via Requirement 22 of the **Draft DCO [PEPD-009]**. Also, as outlined in Table 26.7 of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**, a collaborative approach was carried out between the water environment and terrestrial ecology aspects in the design of the Proposed Development to identify sensitive watercourses which required trenchless crossings. A fisheries habitat survey report recorded the key findings in **Appendix 22.6: Fisheries habitat survey report, Volume 4** of the ES **[APP-184]**. All watercourse crossings which were identified as having 'good' potential fisheries habitat have trenchless crossings proposed (RVX-01, RVX-02, STRX-18). One crossing which was identified as offering 'moderate – good' coarse fishery habitat near Buncton adjacent to Water Lane (STRX-05) was updated to a trenchless crossing to minimise effects from channel disturbance at that location. Several others were described as having 'moderate' potential fisheries habitat (STRX-14, STRX-15, STRX-16), and a range of mitigation measures (such as erosion control, channel profile management, soil storage, bank reinstatement, works timing and duration, pump screening, fish rescue etc) have been embedded to minimise potential effects at those locations, as set out in the **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES [APP-063]. The crossings which were identified as having 'poor' potential fisheries habitat are predominantly open cut trenched crossings, owing to their low overall sensitivity.
2.32.8	As previously discussed, and as far as practically possible, we encourage the Applicant to avoid the use of temporary culvert crossings. We would recommend the use of existing access points or using temporary bridges as an alternative. It has been noted that this has been addressed in the latest documentation and we would welcome a further discussion when more detailed locations have been determined.	Feedback from the Environment Agency regarding temporary culvert crossings was taken into account in paragraphs 5.10.13 – 5.10.14 of the **Outline Code of Construction Practice (CoCP) [PEPD-033]**. In the context of this Proposed Development, temporary crossings relate to the proposed temporary haul roads only as the onshore cable will be installed below the bed of watercourses. All trenchless cable watercourse crossings would have no need for associated temporary haul road crossings as they would be accessed via adjacent fields / accesses.

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		An embedded environmental measure (C-229) outlined in the **Commitments Register [APP-254]** (which has been updated for Deadline 1) secured through the **Outline CoCP [APP-224]** and Requirement 22 of the **Draft Development Consent Order (DCO) [PEPD-009].** This will ensure that where the onshore cable route is open cut trenched, sensitive watercourse locations will be crossed by open span haul road bridges (e.g. DTX-1de-14 and STRX-1de-03 as outlined in outlined in paragraph 5.10.14 of the **Outline CoCP [APP-224]** which states that "*Clear span bridges will also be used for those watercourses too wide or deep to be crossed using culverts*" and that "*watercourse crossings will be designed to minimise morphological and conveyance effects and sized to maintain existing flow conveyance*". **Appendix 4.1: Crossing schedule, Volume 4** of the ES **[APP-122]** provides information on proposed cable crossing methodologies and of those listed, only open cut trenched crossings of Ordinary Watercourses will require temporary haul road crossings.
2.32.9	We welcome the opportunity to look at in more detail and comment on those crossings which will require FRAPs, including methods to create dry working areas, over-pumping, and temporary crossings or culverts.	On the basis of the above information (**references 2.32.7** and **2.32.8**), all Main Rivers identified by the Environment Agency would be crossed via trenchless crossing technology with no need for associated temporary culverts. As such, it is not anticipated that there will be any Flood Risk Activity Permit (FRAP) requirements associated with methods to create dry working areas, over-pumping and temporary crossings or culverts, but there may be FRAP requirements for drilling under the Main Rivers (River Arun, Black Ditch, River Adur and Cowfold Stream). Methodologies for works where there is a requirement for a FRAP (e.g., works in, under, over or within 8m of the top of the bank of any designated Main River and 16m from a Coastal Defence) will be provided by the contactor who will be appointed post-Development Consent Order (DCO) award.
2.32.10	It is noted that the Applicant has acknowledged in the latest documentation that stockpiles should be ideally situated outside of Flood Zones 2 and 3. If they are in the floodplain, the Applicant should ensure the floodplain is connected to minimise any impacts on flow conveyance. Steps have been taken to address the issue, but the location of stockpiles will still need to be agreed.	Table 8-1 of **Appendix 26.2: Flood Risk Assessment (FRA), Volume 4** of the ES **[APP-216]** identifies a range of flood risk management measures identified to ensure there will be no adverse impacts on flood conveyance and these include commitments C-130, C-131, C-132, C-179, C-180 and C-133 in the **Commitments Register [APP-254]** (which has been updated for Deadline 1) secured through the **Outline Code of Construction Practice (CoCP) [APP-224]** and Requirement 22 of the **Draft Development Consent Order (DCO) [PEPD-009]**. C-132 commits to a ratio of regular stockpile gaps at topographic low points to prevent floodplain compartmentalization. Stockpiling activities will be carried out in accordance with the principles discussed with the Environment Agency on 22 March 2022, with follow up email correspondence from the Applicant on 03 August 2022 with the Environment Agency. During those exchanges the Environment Agency noted that it agreed in principle with the approaches to soil stockpile management within the Arun Valley floodplain. Engagement will continue throughout the DCO Examination. During the post-DCO consent detailed design stage, the Flood Risk Activity Permit (FRAP) applications will contain further detailed information about specific stockpile locations.

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2.32.11	It is noted that the Applicant has acknowledged in the latest documentation that further details of access tracks and construction compounds will need to be discussed, with any consenting requirements considered.	The five proposed temporary construction compounds and indicative temporary construction haul road (related to the onshore cable corridor) are shown in Figures 26.2.1a – e and 26.2.2 of **Appendix 26.2: Flood Risk Assessment (FRA), Volume 4** of the ES **[APP-216]**. As noted in paragraph 10.1.9 of **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]**, the temporary construction compounds will be located in Flood Zone 1 with runoff rates from those areas limited to pre-development rates through site specific drainage strategies incorporating sustainable drainage systems (SuDS) principles as outlined in commitment C-73 (**Commitments Register** **[APP-254]** which has been updated for Deadline 1) and secured through the **Outline Code of Construction Practice (CoCP)** **[APP-224]** and Requirement 22 of the **Draft DCO** **[PEPD-009]**. Information on temporary construction access and haul road parameters are presented in Paragraph 4.4.19 to 4.4.20 of **Appendix 26.2: FRA, Volume 4** of the ES **[APP-216]**. The temporary construction haul road will run along the length of the onshore cable route, except for locations where there are trenchless watercourse or road crossings. In areas where it is anticipated that the raised stone haul road and associated stockpiles may cause an obstruction to flood water (e.g., on the floodplain), then road mats (also often referred to as 'trackway') placed on the existing ground surface will be used instead (thus avoiding both the raised stone road and the associated stockpiles) as outlined in C-119 (**Commitments Register** **[APP-254]** which has been updated for Deadline 1) and secured through the **Outline CoCP** **[APP-224]** and Requirement 22 of the **Draft DCO** **[PEPD-009]**. The temporary construction haul road will be approximately 6m in width, occasionally increasing to 10m at its widest point. The temporary construction haul road will be used during installation works and construction activities and will be removed prior to final reinstatement. Detailed methodologies for works where there is a requirement for a Flood Risk Activity Permit (FRAP) (e.g., works in, under, over or within 8m of the top of the bank will be provided by the contactor who will be appointed following the Examination phase. The relevant permitting and consenting requirements contained within embedded environmental measure C-17 are set out in Section 26.7 (Table 26-20) of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**. This will be secured via adherence to The Environmental Permitting (England and Wales) Regulations 2016.
2.32.12	Consideration for pre-construction and post-construction asset condition surveys will be required. This will be relevant to any construction activities in close proximity to Main Rivers and subsequent assets. Further details of this will be required as part of the consenting process.	The Applicant acknowledges that any requirements for asset condition surveys would be covered under the relevant permits as part of the consenting process. Table 26-9 in **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]** outlines "*Environmental measures (C-17, C-77, C-126, C-142 and C-182) are included to ensure adherence to the permitting regime (see Section 26.7) which will cover any temporary construction activities in close proximity to Main Rivers and subsequent assets*". This relates to the trenchless crossings of the Main Rivers such as River Arun, Black Ditch, River Adur (West Branch) and Cowfold Stream as well as the Environment Agency flood defences at the Climping Beach frontage, River Arun and River Adur (West Branch).
2.32.13	Biodiversity: The Applicant has provided a significant amount of documentation and detail has with regard to the elements that might impact upon water dependent habitats and species of which the Environment Agency leads. We are happy with the quantity of data collected on biodiversity elements and comfortable that concerns we have previously raised are being addressed.	The Applicant has no further comments on this matter at this time.

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2.32.14	We support the standoff distance proposed from watercourse bank tops, though this currently has no specified distance. Clarification would be welcomed and, in our opinion, this should be a minimum of 3m in most locations.	Stand-offs to watercourses will be implemented in all locations where they are not crossed using open cut trenching methodology or where an access road is located. Outside of crossing points (by openly trenched cable or access road) a stand-off in excess of 3m will be achieved from all construction works. The exception to this will be where any existing access routes (e.g. farm tracks), including existing crossing points, require repair and their original alignment takes them in close proximity to a watercourse. The stand-off distance of at least 3m has been included in the **Commitments Register** **[APP-254]** (updated for the Deadline 1 submission). This will be secured through the **Outline Code of Construction Practice** **[PEPD-033]** and Requirement 22 of the **Draft** **[PEPD-009]**.
2.32.15	There is mention of a 30m length of vegetation removal for those watercourse crossings which are "open cut". We would like confirmation if this is 30m on both banks (ie 60m in total) or 15m per bank?	Watercourse crossings that are subject to open cut trenching would require the removal of 30m of bankside vegetation (paragraph 22.9.117 of **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**). This vegetation will be removed on each bank (60m in total) to enable the duct blocks to be craned into place and give access to excavators etc. This is a realistic worst-case scenario and may be reduced at detailed design stage.
2.32.16	The Applicant has confirmed that preconstruction surveys will be carried out for water vole and Great Crested Newts where the route intersects suitable habitat, which we support given the timeframes involved in the proposal.	The Applicant has no further comments on this matter at this time.
2.32.17	We are pleased to see that all 17 ponds within the Development Consent Order limit are confirmed to be retained, and that all ponds have been considered Habitats of Principal Importance (HPI).	The Applicant welcomes the Environment Agency's support for the approach to ponds. For clarity there are a total of 13 ponds and 4 ditches within the proposed Order Limits. A ponds plan has been included as a visual aid alongside the vegetation retention plan, Figure 7.2.5 of Appendix B Vegetation Retention Plans, **Outline Code of Construction Practice** **[PEPD-033]** updated at Pre-Examination Procedural Deadline A dated 16 January 2024.
2.32.18	There are some discrepancies that need resolving: For example, there is some confusion in the Water Environment Document (River Adur Catchment 26.6.18-25) - it appears that several times when the tidal Arun is referred to this is an error, and further on in the document. This is important to amend to remove uncertainty.	This is noted as an erratum to the DCO Application (attached to the covering letter for Pre-Examination Procedural Deadline A **[PEPD-001]** dated 16 January 2024).
2.32.19	The Lyminster Bypass, currently being built, is not mentioned in cumulative effects although the proposed cable route intersects with this. We would like it to be acknowledged in the documents that contact has been made with the developers as this is now more pertinent than the A27 bypass which is currently on hold.	This is noted as an erratum to the DCO Application (attached to the covering letter for Pre-Examination Procedural Deadline A **[PEPD-001]** dated 16 January 2024).
2.32.20	Groundwater and Contaminated Land: We are largely satisfied with the Hydrogeological Risk Assessment as provided. The contents would appear to align with previously agreed techniques and mitigation methods. However, the risk assessment does not preclude the use of drilling fluids containing hazardous or environmental harmful substances. We have previously agreed that these will not be used in sensitive locations such as within a SPZ. We would wish to agree as to exactly where and in what circumstances drilling fluids containing hazardous or environmentally harmful substances are used. We are comfortable that this can be agreed as part of general works moving forward.	The **Commitments Register** **[APP-254]** (updated for the Deadline 1 submission) and **Appendix 26.4: Hydrogeological Risk Assessment, Volume 4** of the ES **[APP-218]** identify commitment C-137 which outlines that "*there will be no storage of hazardous materials including chemicals, oils and fuels within any SPZ*". This is secured through the **Outline Code of Construction Practice (CoCP)** **[APP-224]** and Requirement 22 of the **Draft DCO** **[PEPD-009]**. Further assurances regarding use of drilling fluids are provided within the embedded environmental measures outlined in paragraph 5.2.16 of **Appendix 26.4: Hydrogeological**

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		Risk Assessment, Volume 4 of the ES **[APP-218]**, which states that "*Environmentally hazardous drilling fluids, or those containing groundwater hazardous substances, will not be used during trenchless crossings (including HDD)*" (C-245) as secured through the **Outline CoCP** **[APP-224]** and Requirement 22 of the **Draft DCO** **[PEPD-009]**. The locations of the indicative trenchless crossing (including HDD) compounds and their Limits of Deviation are shown on Figures 26.6a-n in **Chapter 26: Water environment – Figures (Part 2 of 2), Volume 3** of the ES **[APP-118]**.
2.32.21	We also note that monitoring will take place of private and public water supplies in the vicinity of the development corridor. It would be helpful if we could also be supplied with this monitoring.	The Applicant acknowledges the Environment Agency's request for future public and private water supply monitoring data where monitoring is undertaken. Commitment C-253 in the **Commitments Register** **[APP-254]** (updated for the Deadline 1 submission) sets out commitments in relation to Private Water Supply (PWS) monitoring which are all registered with Arun District Council (ADC) as secured through the **Outline Code of Construction Practice (CoCP)** **[APP-224]** and Requirement 22 of the **Draft DCO** **[PEPD-009]**. Provision of monitoring data to the Environment Agency will be subject to the consent from the PWS supply owners and ADC under General Data Protection Regulation (GDPR).
2.32.22	We are generally satisfied with the geo-environmental desk study. We would remain of the opinion that the historic contamination risks associated with the study area are on the whole low.	The Applicant welcomes the Environment Agency's Representation with respect to the content within **Appendix 24.1: Phase 1 geo-environmental desk study, Volume 4** of the ES **[APP-198]** and the agreement that historic contamination risks associated within the Study Areas are on the whole low.
2.32.23	As identified in the desk study though there may be some hotspots of contamination. These should be appropriately managed and investigated to ensure no risk to any controlled water receptors.	The **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** provides the Applicant's commitment (C-71) that the locations identified in the **Appendix 24.1: Phase 1 geo-environmental desk study, Volume 4** of the ES **[APP-198]** will be subject to further contamination assessment, post-DCO consent, in line with the Environment Agency's guidance on land contamination and risk management (LCRM). This is secured through Requirement 25(1) of the **draft DCO** **[PEPD-009]**.
2.32.24	Historical Landfill: We note the presence of historical landfill(s) within the route plans. These probably represent the largest contamination risk, though we acknowledge that these are largely non-biodegradable waste and mostly fairly old. This would reduce the overall risk potential.	The Applicant welcomes the Environment Agency's agreement that the historical landfill(s) likely represent the largest contamination risk and the acknowledgement that the overall risks from the historical landfills is low given their age and waste type.
2.32.25	Any works associated with this scheme must not compromise any containment features of these landfills or create preferential pathways for contaminants within the landfill, to offsite receptors. We would though acknowledge that due to the age and suspected nature of the landfill, it is unlikely that many containment features were incorporated in their designs, however if any features are present then proposed works must ensure that these are not compromised.	The Applicant welcomes the Environment Agency's comment that whilst works must not compromise any containment features, the age of the historical landfills means containment features are unlikely to be present. The **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** outlines the Applicant's commitment that the historical landfills (as one of the locations identified in **Appendix 24.1: Phase 1 geo-environmental desk study, Volume 4** of the ES **[APP-198]**) will be subject to further contamination assessment, post-DCO consent, and that appropriate remediation will be implemented where required in line with the Environment Agency's guidance on land contamination and risk management (LCRM). This is secured through Requirement 25 of the **Draft DCO** **[APP-019]**.
2.32.26	We would also highlight that any waste material removed from the landfills as part of construction would be classed as waste material. As such they cannot be re-deposited and must be appropriately disposed of as waste material.	Section 4.12 of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** provides the Applicant's commitments to the management of excavated soils in line with the Contaminated Land: Applications in Real Environments (CL:AIRE) (2011) Definition of Waste Code of Practice and Waste Regulations (DoWCoP). This includes development of a

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		Materials Management Plan (MMP) declared by a Qualified Person and for material that is not suitable for reuse to be managed as waste material in accordance with the Waste Regulations (2011) and removed offsite for treatment / disposal under Duty of Care (commitment C-31 and C-69). Stage specific CoCPs will detail these measures and be secured via Requirement 22 of the **Draft DCO** **[PEPD-009]**.
2.32.27	If the borehole will be lost as part of the development, then it should be suitably decommissioned and backfilled, prior to constructions, this must be done to ensure it does not represent a rapid pathway to any underlying aquifers.	Where boreholes are installed by the Applicant or found to be present onsite prior to construction, these will be decommissioned in line with Environment Agency (2012) *Good Practice for decommissioning redundant boreholes and wells*. The Applicant considers that this forms part of the commitment in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** to ensure land is suitable for the proposed use in line with the Environment Agency's land contamination and risk management (LCRM) guidance and will be secured via Requirement 22 of the **Draft DCO** **[PEPD-009]**.
2.32.28	If, during development works, contamination (including any contamination not previously identified) is found to be present then appropriate remedial works should be undertaken to address any residual risks.	The **Outline Code of Construction Practice (CoCP)** **[PEPD-003]** provides the Applicant's commitment that an unexpected contamination protocol will be developed and in place prior to construction to ensure appropriate management of unexpected contamination in line with the Environment Agency's land contamination and risk management (LCRM) guidance as detailed in commitment C-72 in the **Commitments Register** **[APP-254]** (updated for the Deadline 1 submission), which is secured through Requirement 25(3) of the **Draft DCO** **[PEPD-009]**. Stage specific CoCPs are required pursuant to Requirement 22 of the **Draft DCO** **[PEPD-009].**

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Table 4-2 Applicant's Response to Historic England [RR-146]

Ref	Relevant representation comment	Applicant's response
2.33.1	Significance of the Study Area Parts of the onshore Study Area have demonstrable historical and archaeological interest (exceptional in some areas). This includes several scheduled monuments: Medieval earthworks east and southeast of St Mary's Church; Itford Hill style settlement and an Anglo-Saxon barrow field at New Barn Down; Prehistoric flint mine and part of a round barrow cemetery at Blackpatch, Farm; Group of four bowl barrows at the Chantry Post; Muntham Court Romano-British site. Furthermore, there is high potential for archaeological deposits outside the scheduled areas that may be of equal significance. This is particularly notable in Zone 2: South Downs. Within the marine archaeology study area, the Applicant has identified 179 known marine heritage receptors including 100 wrecks and 17 recorded aircraft losses. The area has been shown to also contain a complex system of prehistoric inundated valleys and channels. There may also be related archaeological potential at the proposed landfall location.	The onshore historic environment baseline presented in the **Chapter 25: Historic environment, Volume 2** of the Environmental Statement (ES) **[APP-066]** and associated appendices in **Volume 4** of the ES **[APP-199** to **214]**) include a description of these onshore heritage assets identified within the Study Area and consider the potential for presence of archaeological remains within the proposed Order Limits, including a high potential for archaeological remains of high heritage significance within the South Downs. Prehistoric inundated valleys and channels in and around the marine archaeology Study Area, including at the proposed landfall location have been taken into account in the **Chapter 16: Marine archaeology, Volume 2** of the ES **[APP-057]** as described below. Paragraphs 16.6.29 to 16.6.42 of **Chapter 16: Marine archaeology, Volume 2** of the ES **[APP-057]** summarise the interpretation of the archaeological assessment of the offshore sub-bottom data and places the current understanding of the complex prehistoric landscapes and the correlation between marine and terrestrial sediment phases in the context. The channel and valley features have been mapped, as detailed in **Appendix 16.1: Marine archaeology technical report, Volume 4** of the ES **[APP-162]**. Figure 16.3 of **Chapter 16: Marine archaeology – Figures, Volume 3** of the ES **[APP096]** shows Archaeological exclusion zones, including those near the proposed landfall location. Figure 16.4 of **Chapter 16: Marine archaeology – Figures, Volume 3** of the ES **[APP096]** presents the valleys and channels of geoarchaeological potential within and around the Study Area, including the proposed landfall location. An archaeological assessment of sub-bottom profiler data was undertaken which has resulted in a number of features being identified as of geoarchaeological interest. The features reveal a complex system of inundated valleys and channels interlinked and associated with The Northern Palaeovalley. The palaeo-Arun valley (MA3000), as mapped by (Gupta et al, 2008), is clearly visible. The extent of a channel feature (MA3001) identified during the development of the Rampion 1 ES has also been confirmed as it extends into the Proposed Development Survey Area.
2.33.2	Concerns regarding the Proposed Development 1. Inadequate onshore archaeological baseline assessment and evaluation. The reporting fails to fully understand that the archaeological resource, in some areas, must be considered at a landscape scale, rather than as individual, spatially defined sites. For example, although the chosen onshore route avoids the scheduled areas of the Blackpatch prehistoric flint mine and barrow cemetery and the New Barn Down monument, it passes through an area of the South Downs that has very high potential for discovery of archaeological remains of equal significance to, and potentially directly related to, the scheduled sites. We raised concerns previously that sufficient archaeological evaluation to understand the impacts on archaeological remains of potentially national significance had not taken place along the onshore route. We advised that if appropriate evaluation work was not done prior to application for DCO, the Environmental Statement should describe how the project will provide for retention in situ of any archaeological remains of national significance that are discovered during works. Having reviewed the information supporting the application it	**Chapter 25: Historic environment, Volume 2** of the ES **[APP-066]** has considered all available desk-based and geophysical survey data at a landscape scale, drawing on a range of desk-based and survey data to inform an assessment of archaeological potential as well as considering individual sites and identifies a high potential for archaeological remains of high heritage significance within the area of the South Downs. The assessment presented in **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]** is based on a worst case scenario. Therefore, the Applicant considers that further investigation would not change the outcome of the assessment. Commitments C-79 and C-225 in the **Commitments Register** **[APP-254]** (updated at the Deadline 1 submission) provide for mitigation through design and archaeological recording. Archaeological interest retained in an asset which is actively conserved is more valuable and actively sought though detailed design, which will be informed by evaluation.

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Ref	Relevant representation comment	Applicant's response
	appears that our concerns about the likely presence of, and harm to, potentially important non-designated archaeological remains, have not been addressed. The applicant has not clearly and convincingly demonstrated how they would practicably provide for retention in situ. In the embedded environmental measures, we consider there is too much reliance on the recording of archaeological remains as mitigation. Avoiding harm to nationally important heritage assets, not mitigation of impacts, should be the primary objective.	The environmental embedded measures were established and adapted through the pre-DCO Application consultation process. Following a meeting on 27 October 2023 with the West Sussex County Council (WSCC) Archaeologist, C-225 has been updated by the Applicant within the and the **Commitments Register** **[APP-254]** (updated at the Deadline 1 submission) to the following: C-225 states "*Where previously unknown archaeological remains of high heritage significance are identified through surveys along the cable route, and where these locations have not been possible to avoid during earlier design stage, consideration will be made for engineering solutions (e.g. narrowing of the construction corridor, divert cable route within DCO Order Limits, re-siting stockpiles) to avoid impacts in the first instance ~~minimise direct impacts~~. Where impacts are not avoidable, these will be minimised where possible through design solutions and an appropriate programme of mitigation will be undertaken to ensure preservation by record. Such measures will be reviewed in consultation with relevant stakeholders (WSCC Archaeologist and Historic England). An onshore outline WSI provides detail of appropriate methodologies to be implemented during the evaluation and mitigation stages of the archaeological works.*" Commitments C-79 and C-225 are secured within the **Outline Onshore Written Scheme of Investigation (WSI)** **[APP-231]**, which would itself is secured by Requirement 19 of the **Draft DCO** **[PEPD-009]**. Further consultation is currently being undertaken with the WSCC Archaeologist and Historic England on the Outline WSI and a revised version will be submitted at Examination Deadline 3. The **Outline Onshore Written Scheme of Investigation (WSI)** **[APP-231]** sets out the methodological approach for archaeological investigations which ensures further investigation will be undertaken prior to construction. The **Outline Onshore Written Scheme of Investigation (WSI)** **[APP-231]** also sets out the measures that will be taken in response to the disturbance of archaeological remains resulting from work at onshore construction areas and which cannot be avoided through appropriate design measures. Engagement will be undertaken with Historic England to provide comment/input to this document which will be updated and throughout the Examination. Site specific WSIs are secured through Requirement 19 of the **Draft DCO** **[PEPD-009]**.
2.33.3	2. Limitations of marine archaeology evaluation We note that, following our comments on the PEIR consultation exercise, all potential effects on the marine historic environment previously scoped out have been scoped in and are now included and assessed in this Environmental Statement (ES). We are aware that marine geophysical survey was undertaken in 2020 and in 2021 and we concur with the Applicant that there is the possibility that presently unidentified marine heritage receptors might be discovered within the proposed DCO Order Limits which could be impacted directly or indirectly by the proposed development. The ES describes the use of historic datasets and geophysical data acquired for this project. However, it is apparent that geotechnical survey work has not been conducted. It is therefore important that the Outline Written Schemes of Investigation (WSI) provides for geoarchaeological analysis of geotechnical survey materials. We will provide further advice as may be necessary in our Written Representation.	During the Evidence Plan Process, discussions included the geophysical surveys, the use of historic datasets, and the Applicant advised that geotechnical survey work would not be carried out during the pre-DCO Application stage. However, all available information will be used to ensure that the Final offshore Written Scheme of Investigation (WSI) and embedded environmental measures state that archaeological input must be sought ahead of geotechnical campaigns (in accordance with commitment C-59 (Offshore geotechnical surveys prior to construction will be undertake)) secured in Condition 11(2) of the draft Marine Licence (dML) (Schedules 11 and 12 of the **Draft DCO** **[PEPD-009]**). The Applicant awaits further advice from Historic England as may be necessary in their Written Representation.

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Ref	Relevant representation comment	Applicant's response
2.33.4	3. Inaccurate assessment of magnitude of impact and significance of effect Embedded environmental measures (EEM), such as recording archaeology before any loss, would not reduce harm or magnitude of impact. While investigating archaeology at risk of loss or disturbance is essential and will reduce the loss of knowledge and understanding, it cannot reduce the actual harm. Therefore, the downgraded assessment of the impact and the resultant effects being classified as 'Not Significant' is misguided and misleading. This pertains to both onshore and marine heritage receptors.	The assessment methodology followed in the **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]** is consistent with the methodology that was set out within the Scoping Report. It is also consistent with the approach which has been used in previous environmental assessments for other recent DCO projects such as Sizewell C nuclear new build and Yorkshire Green grid connection. In the case of Sizewell C, where a decision was made and consent was granted, the approach was accepted by the Examining Authority. **Chapter 25: Historic environment, Volume 2** of the ES **[APP-066]** provides an assessment of effects on a 'worst-case' basis based on the description and parameters of the Proposed Development, as set out in **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045],** and therefore in the absence of engineering responses to be implemented through Commitment C-225 in **Commitments Register [APP-254]** (updated at the Deadline 1 submission). It is acknowledged that an agreed scheme of archaeological investigation, recording and dissemination, following any mitigation by detailed design (such as narrowing of the construction corridor, refinement of the onshore cable route within Order Limits), would still result in loss or truncation of archaeological remains but the archaeological interest would be preserved by record before the loss occurs. Archaeological interest retained in an asset which is actively conserved is more valuable and actively sought though detailed design, which will be informed by evaluation. Mitigation through recording would serve as partial mitigation. The assessment of residual effects in **Chapter 25: Historic environment, Volume 2** of the ES **[APP-066]** takes this mitigation into account in determining the magnitude of change. The **Outline Onshore Written Scheme of Investigation (WSI) [APP-231]** provides the overarching approach to further evaluation and subsequent mitigation, which is to be updated in line with feedback from stakeholders. The **Outline Onshore WSI [APP-231]** (secured by Requirement 19 of the **Draft DCO [PEPD-009]**) provides for the production of site-specific WSIs which will set out the requirements for further investigation where this has not been completed pre-DCO consent, as well as for mitigation measures to secure archaeological recording and reporting. Heritage assets in the marine zone as defined in Table 16-8 (**Chapter 16: Marine archaeology, Volume 2** of the ES **[APP-057]**) and the archaeological potential within the marine archaeology study area have been considered and assessed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES **[APP-162]**. The **Outline Marine WSI [APP-235]** which is secured through the **Draft DCO [PEPD-009]**) include the commitment to avoid all known marine heritage receptors and to further investigate areas of potential impacts ensuring that unknown receptors are located, and impact mitigated which will ensure preservation *in situ*. Where items might be removed from the seabed, conservation strategies will be clearly outlined in the relevant method statements produced and submitted to Historic England ahead of any such archaeological works.
2.33.5	Policy The National Policy Statements are of relevance to the proposals: Overarching National Policy Statement for Energy (EN-1) (Department of Energy and Climate Change (DECC), 2011a); National Policy Statement for Renewable Energy (EN-3) (DECC, 2011b); and National Policy Statement for Electricity Networks (EN-5) (DECC, 2011c). Each of these statements includes policies specifically related to the avoidance of harm to heritage assets and guidance for the Examining Authority on determining applications which would cause	The National Policy Statements EN-1, EN-3 and EN-5 (Department of Energy and Climate Change (DECC), 2011a; 2011b and 2011c) extant at the time of submission of the DCO Application and against which it will be tested are considered in the historic environment assessments within **Chapter 16: Marine archaeology, Volume 2** of the ES **[APP-057]** and **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**. These ES chapters also consider the revised NPS EN-1, EN-3 and EN-5 (Department for Energy Security and

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Ref	Relevant representation comment	Applicant's response
	harm to the significance of heritage assets and guidance for the Examining Authority on determining applications which would cause harm to the significance of heritage assets.	Net Zero (DESNZ), 2023a; 2023b and 2023c) which took effect in January 2024, and are a relevant consideration in the decision-making process. A NPS review document (**Statement on the new National Policy Statements for Energy** (**Document Reference 8.29**)) has been submitted at Deadline 1 to provide a comparison of significant changes between the draft NPSs of March 2023 against the NPS as subsequently designated by Parliament in January 2024.
2.33.6	**Historic England's Position** Historic England do not object in principle to the Proposed Development. However, we consider there is the potential for a high level of harm to non-designated archaeological heritage assets, some of which may be of national significance. This pertains to both the onshore and marine receptors, but particularly concerns the area within Zone 2: South Downs, which has a concentration of nationally important heritage assets and high archaeological potential. Our concerns therefore are that i) insufficient evaluation has been done in advance of the application for onshore, intertidal and offshore areas, ii) the onshore route selection process was determined without due regard to the potential significant effects on heritage, and iii) the embedded environmental measures do not include convincing and practicable provision to avoid the risk of harm to potentially nationally important archaeological remains.	The acknowledgement that Historic England do not object to the principle of the Proposed Development is welcomed by the Applicant. The project will contribute materially towards meeting the urgent national need for renewable energy generation, significantly reducing carbon emissions from energy, and supporting the achievement of the UK Government's climate change commitments and carbon reduction objectives. **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]** takes into consideration the concentration of nationally important heritage assets and high archaeological potential within Zone 2: South Downs. The assessment adopts a precautionary approach and identifies potential for significant harm to heritage assets with archaeological interest, within this zone (Tables 25-30 in **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**). **Onshore** i) The methodology for baseline data gathering is detailed in Section 25.5 of **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**, including a combination of desk-based research, site walkovers, geophysical survey and targeted trial trenching, to inform the assessment. It is recognised that there is a potential for further as yet unknown archaeological remains to be present and impacted by the development. Relevant embedded environmental measures set out the commitment to ensure sufficient evaluation work is undertaken pre-construction to inform appropriate mitigation responses, to be agreed with relevant stakeholders. **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]** was updated at Pre Examination Procedural Deadline A on 16 January 2024 to include the updated assessment reflecting additional geophysical survey undertaken. ii) **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** describes the alternatives studied by the Applicant and a comparison of their environmental effects across the Proposed Development as a whole. This includes the alternatives considered and consulted on prior to the submission of the DCO Application in August 2023. As described in **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**, the Proposed Development has been developed through a multi-disciplinary design process including environment, engineering, landowner, and cost considerations. It identifies that there was no viable connection option which would have avoided the South Downs National Park (SDNP) altogether, and also describes the multi-disciplinary approach to selecting the onshore cable route within the SDNP. It is noted that historic environment considerations were given due weight in this process, alongside other environmental considerations. With regard identifying that there are no reasonable alternatives, the Applicant has sought to avoid, reduce, or minimise the effects through the design process and also by identifying and securing embedded environmental

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		measures. It is acknowledged that some residual effects remain across the Proposed Development. Section 3.4 of **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** provides the information on the onshore cable route selection process. Section 3.4 describes the onshore cable route selection process and the reasons for other sites being discounted based on the multi-disciplinary factors identified in the paragraph above. Significant weight was also given to the environmental constraints and related policy in the overall balance of the decision. iii) Embedded environmental measures outlined in the **Commitments Register** **[APP-254]]** (updated at the Deadline 1 submission), and the **Outline Onshore Written Scheme of Investigation (WSI)** **[APP-231]** provide for an appropriate and proportionate programme of evaluation, and subsequent mitigation by avoidance/reducing effects through design, and preservation by record. Archaeological interest retained in an asset which is actively conserved is more valuable and actively sought though detailed design, which will be informed by evaluation. The environmental embedded measures were established and adapted through the consultation process. **Offshore** i) & iii) Known heritage assets in the marine zone as defined in Table 16-8 (**Chapter 16: Marine archaeology, Volume 2** of the ES **[APP-057]**) and the archaeological potential within the marine archaeology Study Area have been identified and assessed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES **[APP-162]**. The archaeological significance and potential impact on the marine heritage identified within the Proposed Development was undertaken according to the methodology outlined in Section 16.8. Table 16-15 and details the maximum design scenario and relevant activities that may impact archaeological receptors. Evaluation of potential in the marine zone is undertaken by the archaeological assessment of geophysical and geotechnical surveys which have and will continue to be conducted throughout the lifetime of the Proposed Development as detailed in the **Outline Marine WSI** **[APP-235]** which is secured through Requirement 19 and Condition 11 (2) Schedule 11 and 12 of the **Draft DCO** **[PEPD-009]**. Commitment C-225 (in the **Commitments Register** **[APP-254]** updated at the Deadline 1 submission) provides for the use of engineering solutions to minimise impacts to previously unknown archaeological remains of high heritage significance along the onshore cable route and mitigation through recording and dissemination. C-225 would be secured by the **Outline Onshore Written Scheme of Investigation (WSI)** **[APP-231**], an updated version of which will be submitted at Examination Deadline 3.
2.33.7	The Development Consent Order should contain requirements to ensure that appropriate safeguards are in place regarding the historic environment. For example, the outline WSIs for onshore (Document 7.9) and Marine (Document 7.13) will be key documents to ensure adequate provision for historic environment protection, mitigation and enhancement post DCO, should consent be forthcoming. These documents should form the basis of detailed WSIs to be submitted for approval to the relevant bodies and secured through the Schedule of Requirements and the Deemed Marine Licence respectively, should consent be granted. The results of archaeological work undertaken in accordance with the onshore and marine WSIs	Embedded environmental measures (C-225 and C-79 in the **Commitments Register** **[APP-254]** (updated at the Deadline 1 submission)), the **Outline Onshore Written Scheme Investigation (WSI)** **[APP-231]**, and the **Outline Marine Written Schemes of Investigation (WSI)** **[APP-235]** provide for appropriate and proportion programme of evaluation, and subsequent mitigation by avoidance/reducing effects through design and preservation by record. See response to **reference 2.33.2** above for proposed amendments to commitment C-225.

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Ref	Relevant representation comment	Applicant's response
	should inform amendments to the design to avoid or mitigate harm to heritage assets. Harm to nationally important heritage assets should be avoided, if possible.	The **Outline Onshore WSI [APP-231]** and the **Outline Marine WSI [APP-235]** are secured through Requirement 19 and Condition 11 (2) Schedule 11 and 12 of the **Draft Development Consent Order [PEPD-009]** respectively, and provide the overarching approach to further evaluation and subsequent mitigation, which is to be updated in line with feedback from stakeholders, as well as embedded mitigations relevant to marine heritage receptors and detail how data will be collected and assessed to ensure that as yet undiscovered marine heritage receptors are identified. The **Outline Onshore WSI [APP-231]** and the **Outline Marine WSI [APP-235]** provide for the production of site-specific WSIs which will set out the requirements for further investigation where this has not been completed pre-DCO consent, and the results of these further investigations will underpin the subsequent design and amendments as required to avoid and/or mitigate harm to heritage assets. The Applicant will seek agreement of finalised mitigation proposals with the relevant stakeholders at this stage. Should unidentified marine heritage receptors be located during project works, a Protocol for Archaeological Discoveries (PAD) is implemented as detailed in the **Outline Marine WSI [APP-235]**. All intrusive activities undertaken during the life of the Proposed Development will be routed and microsited to avoid any identified marine heritage receptors with Archaeological Exclusion Zones. The **Outline Marine WSI [APP-235]** will be superseded by a Draft WSI and thereafter a final Agreed WSI which will take into accounts stakeholder feedback. Any archaeological campaigns undertaken will be clearly outlined in relevant method statements produced and submitted to Historic England ahead of works commencing.
2.33.8	If consent is granted, provision should be made in the Schedule of Requirements to secure avoidance and/or mitigation of harm by requiring the approval of Relevant Authorities. The scale of this project requires the collection of a significant quantity and variety of historic environment and archaeological data in a wide range of formats including digital and physical artefact resource. We recommend it should be a requirement of the DCO, should it be granted, that a project plan be approved by the LPA for a secure project archive and outreach programme, which should then be implemented to the satisfaction of the relevant authorities. For the reasons outlined above, Historic England wishes to register its interest in the examination of the Rampion 2 Offshore Wind Farm DCO.	Embedded environmental measure C-261 in the **Commitments Register [APP-254]** (updated at the Deadline 1 submission) provides for an appropriate and proportional programme of public outreach to be developed and implemented by the Applicant. Commitment C-79 provides for appropriate curation/deposition of the site archive and is secured through Requirement 19 of the **Draft DCO [PEPD-009]**. The requirement for a proportionate programme of public outreach is secured in Section 7 of the **Outline Onshore Written Scheme Investigation (WSI) [APP-231]**, which identifies possible methods of providing public outreach. Securing and treatment of a project archive is also provided for in the **Outline Onshore WSI [APP-231]**. The Applicant invites Historic England to provide specific comment/input to this document, which will be updated throughout the Examination. Site specific WSIs are required through Requirement 19 of the **Draft DCO [PEPD-009]**.

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Table 4-3 Applicant's Response to National Highways [RR-263]

Ref	Relevant representation comment	Applicant's response
2.34.1	Overall, given the nature of the project and its implications for the SRN, and taking into account the processes followed and details agreed in connection with the original Rampion Project, NH believes all outstanding matters regarding Rampion 2 can be similarly resolved. However, for the purposes of the RR and PADS as set out in the Rule 9 letter, a number of matters remain unresolved. NH principal concerns requiring resolution are summarised below:	The Applicant agrees with National Highways that all outstanding matters can be resolved before the end of the Examination and will continue to work with National Highways to resolve the outstanding areas of concern.
2.34.2	NH have particular concerns and requirements in the vicinity of the A27 between Arundel and Worthing: a) The route is proposed to pass under the A27 in the area known as Hammerpot, east of Arundel Sussex which has safety and operational implications for the SRN. NH are concerned to ensure that the A27 ahead of, during and after any construction and throughout the lifetime of the project, or after it becomes redundant, remains at all times a safe, reliable part of the SRN in accordance with section 10 of the Highways Act 1980, the National Planning Policy Framework (2023) and DfT C1/22. To achieve these requirements, NH needs to receive, assess and agree a number of details, including (but not limited to) • Technical specification for all works in the vicinity of (adjacent to/ under/over) the A27 and any other NH assets. The specification must comply with the Design Manual for Roads and Bridges ('DMRB') and would also need to cover consequential aspects of the construction, such as any necessary Traffic Management and impacts on flow rates/ routing etc on the wider SRN (noting that West Sussex County Highways may also have concerns and requirements with regards any consequential effect on the local highway network). It is considered that while the original Rampion scheme successfully accomplished a pass under the A27 further east in 2018, there have been changes to regulatory requirements, technology or other factors which mean there is no guarantee that the proposed location is suitable, viable and deliverable. It may also be the case that more localised factors such as ground conditions, drainage, utilities or other assets or other environmental or other considerations could also mean that the current route cannot be delivered. • Legal framework under appropriate legislation including the Planning Act 2008 and Highways Act 1980 and covering all works in the vicinity of (adjacent to/ on/ under/ over) the A27 and any other NH assets including NH standard protective provisions to sit on the face of the DCO, requirements, side agreements where project specific protective provisions are required by the Applicant, indemnities and other relevant legal agreements where considered necessary. • Any necessary current or future financial considerations covering all works in the vicinity of (adjacent to/ on/ under /over) the A27 and any other NH assets. This could include	The Applicant is in consultation with National Highways on this section of the route and has provided further technical specifications for review. The Applicant is in negotiation with National Highways in respect of protective provisions for inclusion in the DCO and anticipates that these will be concluded within the timeframe of Examination.

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Ref	Relevant representation comment	Applicant's response
	any necessary fees or payments to cover NH costs to process applications, progress any necessary legal agreements or to cover any necessary future monitoring, maintenance or other costs related to the presence of and implications of the cable or other equipment or sundry paraphernalia on the A27 or other NH assets. • Any necessary future maintenance, repair, renewal, redundancy or removal provisions covering all works in the vicinity of (adjacent to/ on/ under/ over) the A27 and any other NH assets. NH needs to fully understand the future physical or other implications of the cable route. For example, the degree to which the presence, maintenance, repair, renewal, redundancy or removal of the cable or other related, equipment or sundry paraphernalia may fetter NH ability to maintain and operate the SRN per se and this section of the A27 in particular. This will require detailed documentation setting out all the implications and any consequential financial, legal or provisions. NH considers that this is a major and significant outstanding matter, comprising a variety of interwoven work strands, needing to be resolved ahead of any decision on the DCO. NH is keen to engage with the Applicant to agree the scope of necessary submissions in order to receive and assess the Applicant's submissions through the appropriate processes.	
2.34.3	b) Traffic attracted to, generated by or routed or rerouted as a result of the proposals which has potential implications for the SRN. The Applicant has not made clear to NH the potential impact on drainage of the SRN where the route passes under the A27 at Hammerpot and whether there is an increased risk of flooding of the SRN or neighbouring highway land (including verges) which may place a risk on users of the SRN.	The traffic generated and routed as a result of the Proposed Development are considered by the Applicant in **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES **(Document Reference: 6.2.32)** submitted at Deadline 1. The A27 is a key route for access to the Proposed Development and assessment of nine receptors on the A27 and two on the A23 has been undertaken, as stated at paragraph 23.3.47 including: • Receptor 4 – A27 west of Arundel • Receptor 9 – A27 at Arundel Railway Station • Receptor 11 – A27 south of Crossbush • Receptor 12 – A27 High Salvington • Receptor 13 – A27 / A24 Offington • Receptor 28 – A23 North of the A272 • Receptor 31 – A23 North of the A27 • Receptor 32 – A27 west of the A23 • Receptor 33 – A27 east of the A23 Based on the peak week sensitivity test include within the **Chapter 32: ES Addendum, Volume 2** of the ES **(Document Reference: 6.2.32)** (submitted at Deadline 1), the worst-case heavy goods vehicle (HGV) increase of 97 HGVs per day is predicted to occur at A27 High Salvington (receptor 12) which is equivalent to a 9.7% increase. The peak week for all construction traffic accounts for an increase in total traffic of less than 1% on all assessed receptors. It should be noted that, according to Guidelines for the Environmental Assessment of Road Traffic (GEART) (Institute of Environmental Assessment (IEA), 1993), predicted traffic flow increases below 10% are generally not considered to be significant as daily variations in

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Ref	Relevant representation comment	Applicant's response
		background traffic flow may fluctuate by this amount. The total 18-hour impact at Receptors 13, 34 and 35 are all lower than Receptor 12. The Applicant has been in contact with National Highways to discuss trenchless cable crossing under the strategic road network (SRN). The Applicant is preparing a Design Manual for Roads and Bridges (DMRB) (Standards for Highways, 2020) compliant design for the construction access junction and will progress the trenchless construction design as per the principles set out by DMRB standard CD 622. With regard to the potential impact to drainage and flooding of the SRN, a wide range of environmental measures have been embedded into the Proposed Development to minimise the risk of culvert blockage, changes in watercourse conveyance and increased surface water runoff. Environmental measures include C-28, C-73, C-130, C-133, C-135 and C-176 (provided in paragraph 7.22 of the **Commitments Register** **[APP-254]** (updated at the Deadline 1 submission) within the **Outline Code of Construction Practice** **[PEPD-033]** secured through Requirement 22 of the **Draft DCO** **[PEPD-009]**. Following the implementation of these measures, it is anticipated that there will be no significant adverse effects to the risk of flooding of the SRN or to neighbouring highway land.
2.34.4	c) The construction, operation or maintenance of a site (construction/ compound/ permanent) associated with the project adjacent to or in close proximity to the SRN which is expected to have an impact on the SRN. National Highways have engaged in and commented on the Transport Assessment ('TA) throughout the pre-submission process. While NH do not necessarily agree with all aspects of the TA, NH is content that even if it were to be amended, it would not show a materially different impact on the SRN per se (acknowledging other parties may have different views, for example with regards the local road network). At the SRN level, NH is content that the quantum of traffic generated during the construction, operation and any decommissioning of Rampion 2 would not exceed the thresholds set out in NPPF(2023) or C/122 that would warrant an objection on grounds of congestion or safety. However, at the individual SRN junction level, in the absence of detailed evidence on the type, numbers, timing and management of vehicles (including abnormal loads or other loads with particular needs or characteristics eg cable drum vehicles), NH continue to have outstanding safety concerns. For example, submission document 7.6 Outline Construction Management Plan proposes to utilise Decoy Lane accessed directly from the A27. NH has concerns with regards whether this junction can be utilised while maintaining the safety and reliability of the A27. For example, Decoy Lane is narrow and may not be able to accommodate passing vehicles. This means vehicles may block back (possibly unexpectedly) onto the A27 creating safety concerns and risks. If Decoy Lane cannot be demonstrated to be a safe means of access to the nearby compound and works areas covering quite a long length of the route, then this may have wider implications for the route and its delivery. Hence why NH consider it necessary to resolve this matter prior to the DCO decision rather than at a later date. In addition, given the outstanding details in connection with the viability of a number of sites/compounds etc accessed via the local road network (for example due to	The Applicant welcomes this relevant representation and is engaged with National Highways to resolve the various items described. Further information on use of access junctions is contained within the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** with Table 4-1 outlining the use of each access in relation to construction and operation and maintenance, whilst Tables 5-3 and 6-2 showing the heavy goods vehicle (HGV) and light goods vehicle (LGV) traffic associated with each access. Access A-20 on Decoy Lane south of the A27 will be for light construction vehicles only whilst Poling Crossroads provides routes to access A-25 to the north of the A27 and accesses A-17 and A-18 to the south of the A27. Access A-25 is for operational and light construction purposes whilst accesses A-17 and A-18 are for operational only. As defined in Section 5.6 of the **Outline CTMP** **[PEPD-035a]**, light construction accesses will only be used by only a very small number of LGVs on a very occasional basis to check progress of trenchless crossing construction work. Operational access requirements will also be minimal with scheduled maintenance of the onshore cable route required every 2-5 years generating approximately three LGVs for one day. Some unscheduled or emergency repair visits may also be required but this also typically involve a very small number of LGVs. A stage specific CTMP which accords with the **Outline CTMP** **[PEPD-035a]** will be required to be submitted and approved prior to the commencement of development in the relevant stages, in accordance with Requirement 24(1)(a) of the **Draft DCO** **[PEPD-009]**. It is therefore the Applicant's view that this level of construction traffic generation will not lead to a road safety issue on the A27 or adjacent junctions.

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Ref	Relevant representation comment	Applicant's response
	uncertainty on the deliverability of accesses that comply with standards and safeguard environmental designations and considerations), NH remains uncertain of the routing and hence SRN implications of other proposed elements of the scheme. For example, other mapping from the Outline CTMP indicates potential reliance on the A27 Poling Crossroads to access various compounds. Again, given the current configuration of the junction and the narrow local road network, NH would wish to understand greater details of type, numbers, timing and management of vehicles to individual work locations and cumulatively. Without this detail it is not clear whether the proposals can be delivered without unacceptably affecting the safety of the SRN. It will also be noted that the two mapping extracts do not appear to show consistent locations for compounds/ works areas (A17-A18 south of Poling junction appears on one but not the other).	
2.34.5	d) The construction, operation or maintenance of a site (construction/ compound/ permanent) associated with the project adjacent to or in close proximity to the SRN has implications for the SRN. NH notes from the Outline CTMP (see map above) that various compounds/ work sites will be located immediately adjacent to the SRN. Some, for example, Access 21 (see extract from OCTMP below) will require works to the SRN. In the absence of further details, it is not known whether the enabling works will be possible and hence whether this site can be used as part of the project. Some, for example, Access 22 (see mapping extracts below) suggest it does not need any enabling works on the SRN, yet the project plans show part of the SRN being within the DCO red line boundary. Therefore, NH is unclear as to the meaning and intention of either inclusions or exclusions of parts of the SRN within the redline. Without the necessary clarifications it is unclear on whether the details can be agreed, including any Protective Provisions, legal or technical agreements etc. It could be that these prove not possible and hence the location of works sites or the cable route could come into doubt.	The Applicant welcomes this Representation and is engaged with National Highways to resolve the various items described. The Applicant has prepared a Design Manual for Roads and Bridges (DMRB) compliant access design for Access A-21/A-22 and has shared this with National Highways for review. It is the intention that this design will be subject to an independent Road Safety Audit so that an agreement in principle can be reached on the proposals prior to the end of the Examination. The Applicant is in discussion with National Highways as to the inclusion of protective provisions on the face of the Development Consent Order for the benefit of National Highways and the Strategic Road Network,
2.34.6	e) The need to safeguard NH interests with regards to compulsory acquisition proposals or proposals concerning the acquisition of other rights. Part of the SRN is included in the DCO red line boundary. The implications of this are unclear and need to be clarified and as appropriate included in any Protected Provisions, agreements etc.	Initial contact was made by the Applicant with the National Highways in September 2020 then continued correspondence to confirm land ownership, adopted highway designation and project requirements through to the end of October 2020. Discussions were restarted by the Applicant in June 2021 with clarification and update of project requirements, ownership, and Section 42 consultation in October 2022 through to December 2022. In October 2023, discussions were taken forward the Relevant Representations and Principal Areas of Disagreement Statement submitted to the Planning Inspectorate by the Highways Authority on 3 November 2023 with further meetings and correspondence between the parties through to December 2023. In January 2024, the Applicant contacted the Highways Authority to connect with the property team to confirm the understanding of requirements. The Applicant seeks New Rights and a Restrictive Covenant (i.e. an easement) for the construction, operation, maintenance and protection of the underground cable where it passes underneath the A27 highway (Plots 7/3, 7/5, 7/6, 7/12 and 7/13 of the **Land Plans [PEPD-003]**. Temporary possession powers are sought in relation to the construction access

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Ref	Relevant representation comment	Applicant's response
		(Plots 7/7-7/9, 7/14-7/19). No express objection which particularises any issues relating to compulsory acquisition has been raised by National Highways in their Relevant Representation. The Applicant is satisfied that protective provisions will be agreed between the Applicant and National Highways and secured in the **Draft Development Consent Order [PEPD-009]** to safeguard National Highways' interests as Strategic Highway Authority.
2.34.7	f) The need to safeguard NH interests as the Strategic Highway Authority via the DCO, Protective Provisions, Requirements or other appropriate or relevant legal agreements. Required to cover all works in the vicinity of (adjacent to/ under/over) the A27 and any other NH assets including NH land through NH standard protective provisions to sit on the face of the DCO, requirements, side agreements where project specific protective provisions are required by the Applicant, indemnities and other relevant legal agreements where considered necessary.	The Applicant is sharing further details of the works on and under the strategic road network with National Highways and are confident that detailed designs can be agreed. The Applicant is negotiating protective provisions with National Highways for inclusion on the face of the DCO and expects these to be progressed alongside detailed design work. The Applicant is confident that appropriate protections can be accommodated.
2.34.8	Protective Provisions. NH submitted a draft Protective Provisions document to the Applicant and NH understands the draft Protective Provisions have been passed to the Applicant's legal advisors for consideration and discussion with NH. Agreement to a standard Protective Provisions is essential to enable National Highways to discharge its duties under the Infrastructure Act (2015) on behalf of the Secretary of State for Transport. It is therefore requested that these Protective Provisions attached at Annex B are incorporated into the finalised DCO to afford National Highways with sufficient protection in respect of the safe operation of the SRN and its commercial position.	The Applicant is negotiating protective provisions with National Highways and are confident that appropriate protections can be accommodated.
2.34.9	We have reviewed the main submission documents that may contain information or proposals relevant to the SRN or other NH assets. Our comments on them are as follows: **APP-064 6.2.23 Environmental Statement - Volume 2 Chapter 23 Transport (plus AAP107-APP110 comprising appendices thereto)** We note the document. Our advice to the applicant throughput has been that the ES Transport Chapter should ensure that it appropriately chimes with the Transport Assessment. However, it is for those statutory consultees with specific remits regarding Environmental Statements (for example, the Environment Agency and Natural England) to comment on whether the ES Transport Chapter has met the ES transport related requirements (for example, with regards to air quality, noise, other forms of pollution, climate change etc) and then to consider whether in doing so it means it has appropriately chimed with the Transport Assessment.	The Applicant has no further comments on this matter at this time.
2.34.10	**2) APP-173 6.4.19.1 Environmental Statement - Volume 4 Appendix 19.1 Full results of construction road traffic modelling** **APP-174 6.4.19.2 Environmental Statement - Volume 4 Appendix 19.2 Full results of construction plant modelling**	The Applicant welcomes this Representation and is engaged with National Highways to resolve the various items described.

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Ref	Relevant representation comment	Applicant's response
	We have no comments as such on these documents. Elsewhere we have stated that while we have commented on the Transport Assessment per se, including, modelling methodology, outputs, interpretation etc, overall, we are content that even if it had been done differently, it would have resulted in similar overall levels of traffic and general impacts on the SRN. However, as started elsewhere, we have particular concerns and requirements with regards to identified SRN junctions or site accesses, that the applicant will need to provide sufficient details for to enable NH to confirm that the proposals will not have an adverse impact on the safety, reliability and/or operational efficiency of the SRN.	
2.34.11	**3) APP-196 6.4.23.1 Environmental Statement - Volume 4 Appendix 23.1 Abnormal Indivisible Loads assessment** We have no comments as such on this high-level document. However, as indicated elsewhere in these RRs, we have concerns regarding the potential safety or operation impacts of the use by the applicant of particular SRN junctions or proposed work/ compound sites directly off the SRN. Therefore, we require (as set out elsewhere) the Applicant to provide more details with regards the need for, use/ frequency/ timing of, and management of abnormal loads in connection with various SRN junctions or proposed work/ compound sites.	The Applicant welcomes this Representation and is engaged with National Highways to resolve the various items described.
2.34.12	**4) APP-197 6.4.23.2 Environmental Statement - Volume 4 Appendix 23.2 Traffic Generation Technical Note** We note that the document does not include text referring to or demonstrating compliance with DfT C1/22. However, as stated elsewhere, given the nature of the project with most transport implications arising from the construction and/or decommissioning stages, and given the outline and later required detailed Travel Plans, we are content that the project should be able to, in practice, comply with C1/22 in terms of encouraging active and sustainable travel. With regards other matters covered in the document, as stated elsewhere, our concerns and requirements relate to the specifics of a few SRN junction and access points rather than the overall and generalized traffic impacts, that we require the applicant to address into order to demonstrate their compliance with national transport policy.	The Applicant welcomes this Representation and is engaged with National Highways to resolve the various items described.
2.34.13	**5) APP-224 7.2 Outline Code of Construction Practice** We have no comments as such on this high-level document. However, as indicated elsewhere in the RRs, we have concerns and requirements regarding the potential safety or operation impacts of the use by the applicant of particular SRN junctions or proposed work/ compound sites directly off the SRN. We also have particular concerns with regards the proposed works in the vicinity of (near to/ under/ on /over) A27 at Hammerpot. It would appear most likely that our general concerns and requirements will need to be addressed via either additional detail in or an addendum to the Outline Construction Traffic Management Plan, while the Hammerpot detail will need to be addressed via either additional detail in or an addendum to the Outline Code of Construction Practice.	The Applicant welcomes this Representation and is engaged with National Highways to resolve the various items described.

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Ref	Relevant representation comment	Applicant's response
2.34.14	**6) APP-228 7.6 Outline Construction Traffic Management Plan** We have no comments as such on this high-level document. However, as indicated elsewhere in the RRs, we have concerns and requirements regarding the potential safety or operation impacts of the use by the applicant of particular SRN junctions or proposed work/ compound sites directly off the SRN. It would appear most likely that our concerns and requirements will need to be addressed via either additional detail in or an addendum to the Outline Construction Traffic Management Plan.	The Applicant welcomes this Representation and is engaged with National Highways to resolve the various items described.
2.34.15	**7) APP-229 7.7 Outline Construction Workforce Travel Plan** We have no comments as such on this high-level document. However, as indicated elsewhere in the RRs, we have concerns and requirements regarding the potential safety or operation impacts of the use by the applicant of particular SRN junctions or proposed work/ compound sites directly off the SRN. It would appear most likely that our concerns and requirements will need to be addressed via either additional detail in or an addendum to the Outline Construction Traffic Management Plan	The Applicant welcomes this Representation and is engaged with National Highways to resolve the various items described.

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Table 4-4 Applicant's Response to UK Health Security Agency [RR-047]

Ref	Relevant representation comment	Applicant's response
2.36.1	Thank you for your consultation regarding the above development. The UK Health Security Agency (UKHSA) welcomes the opportunity to comment on your proposals at this stage of the project. Please note that we request views from the Office for Health Improvement and Disparities (OHID) and the response provided is sent on behalf of both UKHSA and OHID. We can confirm that: With respect to Registration of Interest documentation, we are reassured that earlier comments raised by us on 31 July 2020 have been addressed. In addition, we acknowledge that the Environmental Statement (ES) has not identified any issues which could significantly affect public health. Following our review of the submitted documentation we are satisfied that the proposed development should not result in any significant adverse impact on public health. On that basis, we have no additional comments to make at this stage and can confirm that we have chosen NOT to register an interest with the Planning Inspectorate on this occasion.	The Applicant welcomes the Relevant Representation **[RR-047]** from the UK Health Security Agency's including the acknowledgement that the comments raised on 31 July 2020 have been addressed and that the Proposed Development will not result in any significant effects on public health.

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Table 4-5 Applicant's Response to National Grid Electricity Transmission PLC [RR-032]

Ref	Relevant representation comment	Applicant's response
2.37.1	NGET's rights of access to inspect, maintain, renew and repair such apparatus must also be maintained at all times and access to inspect and maintain such apparatus must not be restricted. Further, where the Applicant intends to acquire land or rights, or interfere with any of NGET's interests in land or NGET's apparatus, NGET will require appropriate protection and further discussion is required on the impact to its apparatus and rights. Further detail is set out below. NGET infrastructure within/in close proximity to the proposed Order Limits NGET owns or operates the following infrastructure within or in close proximity to the proposed Order Limits for the Project: Electricity Transmission NGET owns a 400 kV substation and multiple high voltage electricity overhead transmission lines within or in close proximity to the proposed Order Limits. These assets form an essential part of the electricity transmission network in England and Wales. The details of the electricity assets are as follows: Substations Bolney 400 kV Substation Assets within the DNO's Bolney 132 kV Substation Associated cables and apparatus Overhead Lines 4VM 400 kV OHL Bolney – Ninfield 1 Bolney – Ninfield 2 4VF 400 kV OHL Bolney – Lovedean 1 Bolney – Lovedean 2 Associated cable fibre As a responsible statutory undertaker, NGET's primary concern is to meet its statutory obligations and ensure that any development does not impact in any adverse way upon those statutory obligations.	The Land interests owns and operates the existing 400 kV National Grid Bolney substation and multiple high voltage electricity overhead transmission lines within or in close proximity to the Proposed Development. There are further land interests along the proposed onshore cable installation route affected. Focussing upon the Land Interest's freehold ownership at Bolney the existing 400kV National Grid Bolney substation is enclosed by a security fence which the Applicant understands defines the operational land. This land, comprising Plots 34/29, 34/30, is included in the Order Limits for the purposes of Work No 20 but is not subject to Powers of Compulsory Acquisition or Temporary Use. The Land Interest also owns land outside of the security fence which is pasture land, Plot 34/28 of which is proposed to be acquired permanently for the extension to the Bolney substation (work no 20). The Land Interest's plots at Bolney which are required for the permanent and temporary works are shown on Sheets 32, 33 and 34 of the **Onshore Works Plans [PEPD-005]. D**etails of the proposals as they affect the Land Interest at Bolney are shown on Sheets 32, 33 and Sheet 34 of the **Onshore Works Plans [PEPD-005]**. The Land outside of the NGET operational land at Bolney is impacted by the Proposed Development as follows: • the onshore connection works - Works no. 19 for the cable construction and easement; • proposed Bolney Extension Works (Plot 34/28) which would form permanent infrastructure – Works no. 20; • Construction access – Works no. 13 temporary possession powers are required outside the substation operational perimeter fence (Plots 34/15, 34/33, 34/35. 34/36 and 34/37 for an access to build the permanent Bolney extension infrastructure; • Construction compound – (Plots 33/13) Works no. 10 temporary possession powerspowerts are required outside of the perimeter fence for a compound to build the permanent extension infrastructure; • Operational access at the entrance to the existing National Grid Bolney substation - Works no. 19 (Plot 34/25); and • Environmental mitigation – land to the south of the existing National Grid Bolney substation extension Works no. 17. (Plots 34/26 and 34/27) The Applicant has been in regular correspondence with the Land Interest concerning the impacts of the project on its landholding since June 2021. The Applicant visited the proposed location of the cable construction corridor in February 2023 to undertake buried services and other surveys on the area. Since then, the Applicant has had regular contact with the Land

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Ref	Relevant representation comment	Applicant's response
	As such, NGET has a duty to protect its position in relation to infrastructure and land which is within or in close proximity to the draft Order Limits. As noted, NGET's rights to retain its apparatus in situ and rights of access to inspect, maintain, renew, repair and refurbishment such apparatus located within or in close proximity to the Order Limits should be maintained at all times and access to inspect and maintain such apparatus must not be restricted. NGET will require protective provisions to be included within the draft Development Consent Order (the "Order") for the Project to ensure that its interests are adequately protected and to ensure compliance with relevant safety standards. NGET is liaising with the Applicant in relation to such protective provisions, along with any supplementary agreements which may be required. NGET requests that the Applicant continues to engage with it to provide explanation and reassurances as to how the Applicant's works pursuant to the Order (if made) will ensure protection for those NGET assets which will remain in situ, along with facilitating all future access and other rights as are necessary to allow NGET to properly discharge its statutory obligations. NGET will continue to liaise with the Applicant in this regard with a view to concluding matters as soon as possible during the DCO Examination and will keep the Examining Authority updated in relation to these discussions.	Interest's multi-aspect team, most recently via online meetings in November and December 2023. NGET have been willing to engage with the Applicant and have supported project assumptions through an open and constructive dialogue. Teams which have been engaged with are; UK Land and Property, Customer Connections and Asset Protection Teams. Through this regular dialogue, critical information is shared, and this information will inform the necessary agreements to the satisfaction of both parties. The Applicant is in negotiation with NGET in respect of protective provisions for inclusion in the Development Consent Order and anticipates that these will be concluded within the timeframe of examination. The Applicant is continuing discussions to agree a Statement of Common Ground with NGET and will be looking to resolve matters before the end of Examination. SOCG
2.37.2	Compulsory Acquisition Powers in respect of the Project NGET objects to the compulsory acquisition of its land or rights over its land in the absence of an agreed form of Protective Provisions. As noted, NGET's rights to retain its apparatus in situ and rights of access to inspect, maintain, renew, repair and refurbishment such apparatus located within or in close proximity to the Order Limits should be maintained at all times and access to inspect and maintain such apparatus must not be restricted. NGET will require protective provisions to be included within the draft Development Consent Order (the "Order") for the Project to ensure that its interests are adequately protected and to ensure compliance with relevant safety standards. NGET is liaising with the Applicant in relation to such protective provisions, along with any supplementary agreements which may be required. NGET requests that the Applicant continues to engage with it to provide explanation and reassurances as to how the Applicant's works pursuant to the Order (if made) will ensure protection for those NGET assets which will remain in situ, along with facilitating all future access and other rights as are necessary to allow NGET to properly discharge its statutory obligations.	The Applicant is engaged in discussions with NGET to agree suitable arrangements in respect of property rights. Heads of Terms (HoTs) for a deed of easement for the cable installation within NGET owned land and a lease of the Bolney substation extensionland were issued in November 2023 and the land agent acting for NGET has confirmed that the Land Interest would like to work collaboratively with the Applicant and in principle agreed to the structure of agreements proposed subject to NGET approval. NGET subsequently issued a NGET deed of easement HoTs which the applicant understands is based on NGET standard documentation. At this stage, The Applicant remains of the view that a lease is required for the Bolney substation extension with associated construction access and compound rights which NGET is considering, however discussions on the structure of the agreement are ongoing.

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Ref	Relevant representation comment	Applicant's response
	NGET will continue to liaise with the Applicant in this regard with a view to concluding matters as soon as possible during the DCO Examination and will keep the Examining Authority updated in relation to these discussions.	
2.37.3	**Connections** The Project proposes a connection to Bolney 400 kV Substation. In relation to the connection NGET is working with the Applicant to enter into connection agreements and other commercial arrangements at the relevant time. Further updates will be provided in the Statement of Common Ground.	The Applicant is in discussions with NGET and awaits a design proposal for consideration in March 2024.

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Applicant's Response to Natural England [RR-265]

4.1.1 Natural England has submitted a Relevant Representation (RR-265) which includes a cover letter that provides a summary of the legislative and policy framework, Natural England's approach to Relevant Representations and Written Representations, and overview on designated sites affected by the DCO Application, their overall position, a summary of key environmental concerns, and a summary of overarching comments on the DCO Application. Supporting the cover letter, Natural England has provided 11 appendices (Appendix A to K) which provide the more detailed commentary and explanation of key issues. These appendices cover Natural England's representations which are summarised in the cover letter and therefore, the Applicant acknowledges the information contained within the cover letter and has provided detailed responses to each of Natural England's appendices in the tables below.

- **Table 4-6 Applicant's Response to Natural England - Appendix A (Development Consent Order, Deemed Marine Licence)**
- **Table 4-7 Applicant's Response to Natural England - Appendix B (Offshore and Intertidal Ornithology)**
- **Table 4-8 Applicant's Response to Natural England - Appendix C (Marine Mammals)**
- **Table 4-9 Applicant's response to Natural England - Appendix D (Coastal Processes)**
- **Table 4-10 Applicant's response to Natural England - Appendix E (Fish and Shellfish Ecology)**
- **Table 4-11 Applicant's response to Natural England - Appendix F (Benthic, Subtidal and Intertidal Ecology)**
- **Table 4-12 Applicant's response to Natural England - Appendix G (Other plans)**
- **Table 4-13 Applicant's Response to Natural England - Appendix H (Landscape and Visual Impact)**
- **Table 4-14 Applicant's response to Natural England - Appendix I (Seascape, Landscape and Visual Impact)**
- **Table 4-15 Applicant's response to Natural England - Appendix J (Terrestrial Ecology and Nature Conservation)**

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Table 4-6 Applicant's Response to Natural England - Appendix A (Development Consent Order, Deemed Marine Licence)

Ref	Section	Natural England's Comment	RAG	Recommendations	Applicant's Response
Summary of Main Issues					
A1		We are concerned that there is a risk that the In Principle Sensitive Features Mitigation Plan (IPSFMP) (Schedule 11 Part 2 Condition 21 (b)) may not deliver sufficient mitigation, with regards to spatial and temporal piling activity restrictions		We advise that a full piling exclusion March-July inclusive should be included in relation to black seabream as a feature of Kingmere Marine Conservation Zone (MCZ) (Schedule 11 Part 2 Condition 11(1)(k)).	The Applicant is not currently in agreement with Natural England on this issue. Please refer to the Applicant's responses in **Table 4-11 Natural England - Appendix E – Fish and Shellfish Ecology** (below).
A2		We advise that a period of four months is insufficient for approval of some documentation as detailed in Schedule 11 Part 2 Condition 12 (1).		We request that this be amended to a period of no less than six months, in line with the recently agreed period for some conditions during the Examination of the Dudgeon and Sheringham Shoal Extensions Project	As the project comprises a nationally significant infrastructure project it is necessary for there to be a degree of certainty as to the programme for its delivery, particularly given the need for the project to contribute to the Government achieving its net zero target. Four months is considered an appropriate period for the approval of submitted details. However, the applicant is willing to work with the Natural England and the MMO to identify any approvals which require a longer determination period.
A3		We advise that there is a lack of clarity and several omissions to the pre- construction monitoring and survey proposals relating to side scan sonar, benthic ecology features, ornithology features and marine mammals (Schedule 11 Part 2 Condition 16). Therefore, we advise that the relevant condition needs to be amended.		We advise that this condition is updated in line with our comments.	The condition has been amended in the **Draft Development Consent Order (DCO) Revision B (Clean)** [PEPD-009], submitted at Procedural Deadline A.
A4		We note that the construction monitoring plan (Schedule 11 Part 2 Condition 17) does not cover the required construction piling monitoring. Nor does it allow for a halt to works should the noise be significantly in excess of that predicted within the ES.		We advise this is amended to include appropriate during construction monitoring requirements.	It is proposed that monitoring should be undertaken in respect of the first four piled foundations of each piled foundation type piles as provided in the in the **Offshore In Principal Monitoring Plan [APP-240]** submitted as part of the application documents, and with which the construction phase monitoring plan is to accord (pursuant to conditions 11(1)(j) and 17). No further monitoring is considered necessary based on the assessment of predicted effects.
A5		We note that an Outline Kittiwake Implementation and Monitoring Plan (KIMP) has		We advise this should contain a draft compensation schedule to demonstrate how the compensation measures will be secured.	The draft compensation schedule was erroneously omitted from the DCO Application submission, the document has now been

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Ref	Section	Natural England's Comment	RAG	Recommendations	Applicant's Response
		been submitted with the without prejudice derogation case.			submitted to the Examination at Pre Examination Procedure Deadline (16 January 2024), see **Alternative Schedule 17** **[PEPD-017]**.
A6		We also advise that there are a number of seascape commitments and design principles that have not been included.		We advise that once agreed, these should be specifically secured in the Development Consent Order.	The Applicant will continue to work with stakeholders throughout the Examination period to agree additional seascape commitments and design principles, where appropriate, these will be secured through the Development Consent Order.
Document used: [APP-019] 3.1 Draft Development Consent Order					
A7	Part 1, Para 2 Interpretations	We note that no interpretation is provided to define the Relevant Statutory Nature Conservation Body. We advise that, for consistency with other Development Consent Orders (DCOs) and to future proof the DCO against any potential changes, a definition of Relevant Statutory Nature Conservation Body should be provided, and references to Natural England throughout the document replaced with Relevant Statutory Nature Conservation body.		We advise that the DCO is amended to include the appropriate definition and wording. Natural England advise that similar wording that was used in the recent East Anglia 2 DCO.	In the updated **Draft DCO** **[PEPD-009]** submitted at Procedural Deadline A the term Statutory Nature Conservation Body has been defined in article 2 and the deemed marine licences, and references to Natural England in the requirements and the conditions of the deemed marine licences have been updated to use the defined term
A8	Para 1, Para 2 Interpretations Page 8	We note that there is no definition here of the Outline Offshore Operations and Maintenance plans (OOOMP) (document 7.16). The document is also not listed under Schedule 16. The definition of 'maintain' should link not only to the Environmental Statement (ES) but also to the OOOMP, The OOOMP takes the detail from the ES to provide the clear scope for operations and maintenance activities considered under the Deemed Marine Licence (dMLs).		Given the OOOMP defines the scope of operations and maintenance permitted under the DCO/dMLs, we advise this document is included within the definitions and the Schedule 16 list of documents. We advise that the definition of 'maintain' should also include the extent assessed in the environmental statement and defined in the OOOMP. This will make the extent of Operations and Maintenance clear and reduce the potential for misunderstanding during the long operations and maintenance period. Please note that, due to the length of this period, the individuals involved from all parties will change a number of times, and there is significant benefit to having a simple small defined document to cross reference ongoing operations and maintenance requests against.	It is agreed that the **Outline Offshore Operations and Maintenance Plan** **[APP-238]**; (OOMP) should be referenced in the **draft DCO** **[PEPD-009]** and included in Schedule 16. This will be addressed at the next revision to the draft DCO at Deadline 2. The **OOMP** **[APP-238]** will also be updated at this stage including to clarify the condition of the deemed Marine Licences pursuant to which the final document is to be submitted.
A9	Schedule 1 Part 3 para 2 (5) (c) Page 53	Natural England notes that the DCO only provides for a maximum volume of scour protection, while the ES parameters document provides both a maximum volume and area of scour protection. We advise that, given the area of impact is one of the most important factors to be controlled, it should also be provided for here.		We advise the applicant updates these requirements to list the maximum extent of scour protection per turbine/substation and a maximum total.	The **Draft DCO** **[PEPD-009]** has been updated at Procedural Deadline A to include reference to the maximum area of scour protection of for the wind turbines and offshore substations at paragraph 2(6) which already dealt with volume; paragraph 5(c) deals with monopile foundations..

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Ref	Section	Natural England's Comment	RAG	Recommendations	Applicant's Response
		Natural England notes that requirement 4 also only lists a maximum volume, and we advise this should also provide a maximum area of scour protection.			The scour protection and cable protection plan, to be approved in accordance with condition 11(1)(i) of the deemed marine licences at Schedules 11 and 12 to the DCO will control this further at detailed design stage.
A10	Schedule 1 Part 3 para 14 (1) Page 56	This requirement relates to the approval of the Biodiversity Net Gain (BNG) strategy. The wording does not contain a requirement to consult the relevant statutory nature conservation body on this strategy.		We advise the wording is updated to include a requirement to consult the relevant statutory nature conservation body prior to the approval of an BNG strategy.	Requirement 14 in the **Draft DCO** **[PEPD-009]** has been amended to secure that the BNG strategy is submitted to and approved by the relevant planning authority in consultation with the statutory nature conservation body.
A11	Schedule 1 Part 3 general point	Natural England notes that this condition relies on a requirement for a landscape and ecology management plan, based on the outline plan. Natural England advises that you refer to our terrestrial ecology and landscape advise in relation to our concerns regarding this outline plan		We advise that the outline plan is revised to account for terrestrial ecology and landscape advise provided.	Please see responses in relation to ecology and landscape. To the extent that the plan is updated this will be reflected in the DCO by a change in the version referenced in schedule 16.
A12	Schedule 1 Part 3 general point	Natural England notes there is no requirement providing for the surveying for European Protected Species onshore and preventing commencement of works until these surveys are completed. This is a standard DCO requirement and should be included to ensure protection of important species		We advise that the DCO is updated to include the appropriate requirement and recommend that the wording used in the most recent Dudgeon and Sheringham Extension Projects DCO is considered.	The **Outline Code of Construction Practice** **[APP-224]** secures the commitment to pre-commencement surveys for European Protected Species and Protected Species. This is detailed in in **Table 5-5** for reptiles [C-208], badgers [C-209], water vole and otter [C-210], bats [C-211], GCN [C-214] and dormouse [C-232]. Additional description of management measures related to these species is provided in **paragraphs 5.6.47 to 5.6.68** and commitment to securing licences where necessary. Requirement 22 secures submission of detailed codes of construction practice which accord with the outline document for each stage of the onshore works
A13	Schedule 11 and 12 interpretations	We advise that our comments provided above on interpretations (Part 1, Para 2 Interpretations) also apply to the interpretations provided within Schedule 11 and 12 of the deemed Marine Licences.		We advise that the wording is amended as appropriate	The changes made to Schedule 11 have also been made to Schedule 12 of the **draft DCO** **[PEPD-009].**

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Ref	Section	Natural England's Comment	RAG	Recommendations	Applicant's Response
A14	Schedule 11 Part 2 Conditions 1-2 Page 115-116	Natural England notes there is no condition limiting the maximum hammer energy. Given the environmental sensitivities of the area, particularly black bream, we advise that the upper limit of hammer energy for each foundation option is an important part of the projects Rochdale Envelope and should be defined to ensure it is not exceeded. This should be in line with the maximum hammer energies defined in the ES.		We advise that the condition is amended to include a maximum hammer energy. Wording similar to that used on Dudgeon and Sheringham Extension DCO would be appropriate to include in this.	Condition 11(1)(c) of the deemed marine licence at Schedules 11 and 12 to the **draft DCO [PEPD-009]** requires the Applicant to submit and secure approval for a construction method statement in accordance with the construction methods assessed in the environmental statement. These assessed methods include piling. The condition has been amended in the **draft DCO [PEPD-009]** to confirm that the construction method statement must include details of piling methods for approval and therefore the submission and approval of this document will deal with the maximum hammer energies and ensure that they do not exceed with those assessed in the ES. Condition 12 requires that the authorised scheme must be carried out in accordance with the approved documents. Consequently, it is not necessary to include a condition specifically limiting hammer energies to protect the sensitive species
A15	Schedule 11 Part 2 Condition 2 (6) Page 116	Natural England notes that the consent allows for deployment of cable protection up to 15 years from the date of the order. Our advice is this should be 10 years from the commencement of operations, as this is the maximum scope that we can support outside of designated sites. We also note that the wording used may give the Applicant less time to deploy cable protection if the project suffers a delay in the start of works or during construction.		We advise that this wording is amended	The condition has been amended in the updated **draft DCO [PEPD-009]** to allow cable protection to be deployed over a period of 10 years as requested. The trigger for the 10 year period is commencement of the authorised scheme, as the term 'commencement of operations' is not used in the Proposed Development draft DCO.
A16	Schedule 11 Part 2 Condition 3 (1) Page 121	Natural England notes that the wording here is to supply an operations and maintenance plan. However, it does not require that the plan submitted be in accordance with the OOOMP. Please see our above comments regarding the inclusion of the OOOMP within interpretations and definition of 'maintain'.		We advise the condition is amended to ensure the maintenance plan is in accordance with the OOOMP.	As noted above, it is agreed that the **Outline Offshore Operations and Maintenance Plan (APP-238; OOMP)** should be referenced in the **draft DCO [PEPD-009]** and included in Schedule 16. This will be addressed at the next revision to the draft DCO at Deadline 2. The **OOMP [APP-238]** will also be updated at this stage including to clarify the condition of the deemed Marine Licences pursuant to which the final document is to be submitted.

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Ref	Section	Natural England's Comment	RAG	Recommendations	Applicant's Response
A17	Schedule 11 Part 2 Condition 11 (1) (a) Page 121	Natural England notes that the standard micro-siting requirement has been omitted. The requirement here refers to avoiding historic receptors only. While we note there is a specific requirement later to cover the avoidance of chalk, other features of ecological importance, such as *Sabellaria* reef features, should be provided for within the conditions		We advise this condition is amended.	Condition 11(1)(a) of Schedules 11 to the **draft DCO [PEPD-009]** has been amended to remove the reference to specific for historic receptors and instead a new limb has been added to provide for micrositing required for other sensitive receptors at condition 11(1)(a)(v) added.
A18	Schedule 11 Part 2 Condition 11 (1) (c) (v) page 148 and page 121	Natural England notes that the wording here states 'cable routing to ensure micrositing and where possible to avoid subtidal chalk features and areas which have potential to support black seabream nesting'. We advise that this commitment does not include all sensitive ecological features. We advise it should be amended in line with our advice on the benthic ecology chapter. We advise that key omissions are Sabellaria spinulosa reef, peat and clay exposures, and Stony/cobble reef.		We advise this condition is amended in line with out comments on the benthic ecology chapter.	As with condition 11(1)(a) the text of condition 11(1)(c) has been broadened in the **draft DCO [PEPD-009]** to include reference to any exclusion zones/environmental micrositing requirements for cable routing rather than setting out a list of sensitive receptors
A19	Schedule 11 Part 2 Condition 16 (2) (a)	We advise this condition should specify side scan sonar.		We advise this condition is amended.	Condition 16(2)(a) has been amended to include side scan sonar in the **draft DCO [PEPD-009].**
A20	Schedule 11 Part 2 Condition 16 (2) (b)	We advise that this should also include Peat and Clay exposures in line with our benthic comments		We advise this condition is amended	The purpose of the surveys has been expanded in condition 16(2)(b) of the **draft DCO [PEPD-009]** to include the location, extent and composition of peat and clay exposures.
A21	Schedule 11 Part 2 Condition 21 (b) – Piling Schedule 11 Part 2 Condition 11 (1) (k)	We advise that there is a risk that the In Principle Sensitive Features Mitigation Plan (IPSFMP) may not deliver sufficient mitigation. In line with our comments on the ES and MCZ Assessment, we advise that a full piling exclusion March-July inclusive is included in relation to black seabream as a feature of Kingmere MCZ.		Based on the evidence provided to date we advise that a full seasonal pilling restriction is included in the DCO.	As noted above, the Applicant is not currently in agreement with Natural England on this issue. The IPSFMP is already required to include spatial and temporal restrictions on piling activities.

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Ref	Section	Natural England's Comment	RAG	Recommendations	Applicant's Response
A22	Schedule 11 Part 2 Condition 12 (1) Page 123	Given the increase in size and complexity of offshore wind farm construction, Natural England considers that a period of four months is insufficient for approval of some documentation. We request this is amended to a period of no less than 6 months.		We advise the condition is amended to provide 6 months. Natural England notes that for the Dudgeon and Sheringham Extension Project, a 6-month period was agreed for some conditions. We would be willing to engage with the Applicant and the Marine Management Organisation (MMO) to potentially come to a similar agreement.	As noted above, four months is considered an appropriate period for the approval of submitted details. However, the applicant is willing to work with Natural England, and the MMO, to identify any approvals which require a longer determination period.
A23	Schedule 11 Pat 2 condition 16 and 18 general point	We note that no monitoring has been included in relation to marine mammals. We refer you to our marine mammals' comments, where we have discussed this point.		We refer you to our comments on marine mammals and advise you to update accordingly.	Marine mammal monitoring is to be undertaken for the first four piles in accordance with the **Draft Piling Marine Mammal Mitigation Protocol [APP-236]** (and the detailed protocol which must accord with this document and is to be submitted and approved in accordance with condition 11(1)(l) of the deemed marine licence). No other monitoring is proposed as the outcome of the assessment is that no significant effects are predicted to occur.
A24	Schedule 11 Part 2 Condition 17 Page 125	Natural England notes the wording here does not cover the required during construction piling monitoring. Nor does it allow for a halt to works should the noise be significantly in excess of that predicted within the ES. Given the environmental sensitivities of the area, we request that this monitoring and the stop requirement be appropriately secured, as it has been in all previous Offshore Wind Farm DCOs.		We advise that this is amended to include appropriate during construction monitoring requirements. Natural England suggests wording similar to the Dudgeon and Sheringham Extension Project DCO is used.	It is proposed that monitoring should be undertaken in respect of the first four piled foundations of each piled foundation type as provided in the in the **Offshore In Principal Monitoring Plan [APP-240]** submitted as part of the application documents, and with which the construction phase monitoring plan is to accord (pursuant to conditions 11(1)(j) and 17). No further monitoring is considered necessary based on the assessment of predicted effects.
A25	Schedule 11 Part 2 Condition 18	We advise that post consent monitoring is not limited to Sabellaria *spinulosa* reef and black seabream. This should be updated in line with our benthic and fish and shellfish comments. We also refer you to our comment on marine mammal monitoring		We advise this is amended in line with our advice on these topics.	It is proposed that monitoring should be undertaken as provided in the in the **Offshore In Principal Monitoring Plan [APP-240]** submitted as part of the application documents with the final monitoring plan secured through condition 11(1)(j) of the deemed Marine Licences at Schedules 11 and 12 of the DCO. No additional monitoring is considered necessary as a result of the outcome of the environmental impact assessment.
A26	Schedule 12 General point	We advise that all points raised above on Schedule 11 are applicable to Schedule 12 where similar provisions exist. To ensure brevity, Natural England will not repeat our comments.		We advise points raised in Schedule 11 should also be addressed in Schedule 12.	Where changes to the **draft DCO [PEPD-009]** are agreed above they have been made to Schedule 12 as well as Schedule 11 as appropriate.

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Ref	Section	Natural England's Comment	RAG	Recommendations	Applicant's Response
A27	General Comment	We note that no compensation provisions or schedules are provided. We advise that, based on our comments on the ornithology thematic area, this is likely to be required.		We refer you to our comments on ornithology and request this is updated accordingly.	The compensation schedule was omitted from the DCO application submission in error. This has now been submitted to the Examination on a without prejudice basis- see **Alternative Schedule 17 [PEPD-017].** .
A28	General Comment	Natural England notes that an Outline Kittiwake Implementation and Monitoring Plan (KIMP) has been submitted to provide for compensation on a without prejudice basis.		The outline KIMP should be updated to contain a draft compensation schedule to demonstrate how the compensation measures will be secured.	As noted above a compensation schedule has now been submitted to the Examination on a without prejudice basis - see **Alternative Schedule 17 [PEPD-017].**
A29	General Comment	In relation to impacts on seascape, there are a number of commitments and design principles. We advise that once agreed upon, we would expect to see these specifically secured in the DCO.		We advise that agreed commitment and design principles are included in the DCO.	The Applicant will continue to work with stakeholders throughout the Examination period to agree additional seascape commitments and design principles. Where agreed these will be secured through the Development Consent Order.

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Table 4-7 Applicant's Response to Natural England - Appendix B (Offshore and Intertidal Ornithology)

Ref	Section	Natural England Comments	RAG	Recommendations	Applicant's Response
B1	Identified Impacts	For several species, the breeding season impacts of other projects have not been included in the cumulative assessment. The Applicant has not given justification for this decision.		Impact figures for all relevant projects for all seasons should be included in the cumulative assessment.	As discussed previously with Natural England and presented within Chapter 12: Offshore and intertidal ornithology of the Preliminary Environmental Information Report[2] (PEIR), a regional approach was taken to breeding season cumulative assessments due to the discrete location within the English Channel. No issues were flagged by Natural England with regard to this approach within the Section 42 responses, therefore this approach was kept consistent for **Chapter 12: Offshore and intertidal ornithology, Volume 2** **[APP-053]**. In the PEIR, no cumulative assessment was presented for herring gull due to the limited potential effect from the project alone. Following review of the PEIR chapter, Natural England requested inclusion of a cumulative assessment for herring gull. For ES submission, cumulative assessment of herring gull was assessed and presented as requested within **Chapter 12: Offshore and intertidal ornithology, Volume 2** **[APP-053]**. However, due to a change in Natural England's best practice guidance (Parker et al., 2022) between drafting of the PEIR and ES, the decision was made to present the cumulative herring gull breeding season impacts for all projects within the UK North Sea and Channel Biologically Defined Minimum Population Scales (BDMPS) as recommended in the latest guidance, rather than a regional approach as was agreed appropriate with Natural England for other cumulative assessments.
B2	Cumulative Effect Assessment Conclusions	Natural England does not agree with Applicant's view that the cumulative effects on great black-backed gull are not significant.		Natural England advises that there is evidence to suggest that the cumulative impact on great black-backed gull is moderate adverse at the EIA scale, and therefore the Applicant should carefully consider whether there are ways to mitigate this effect without negatively impacting on other receptors (e.g. seascape impacts).	In accordance with Natural England's recommendations, the Applicant will undertake further consideration of the potential impact on great black-backed gull from the project alone and cumulatively. This will include further refinement of potential connectivity between the UK great black-backed gull population and the project, spatial usage of the project area by great black-backed gulls and if necessary, and feasible, potential mitigation options to further reduce predicted impacts levels. This information will be presented within **Appendix 19 - Great Black-Backed Gull Assessment Sensitivity** **(Document reference 8.31.19)** submitted at Deadline 1.
Habitats Regulations Assessment					
B3	Assessment -	Natural England does not agree with the Applicant's conclusion that there is no increased risk of Adverse		We note that the Applicant has	The Applicant is continuing to progress a collaborative approach to deliver additional nest spaces on an Artificial Nesting Structure (ANS)

[2] https://rampion2.com/wp-content/uploads/2021/07/Rampion-2-PEIR-Volume-2-Chapter-12-Offshore-ornithology.pdf

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Ref	Section	Natural England Comments	RAG	Recommendations	Applicant's Response
	Kittiwake in-combination at Flamborough and Filey Coast (FFC) Special Protection Area (SPA).	Effect on Integrity (AEOI) for kittiwake at Flamborough and Filey Coast (FFC) Special Protection Area (SPA). This site has already reached AEoI for this species, and therefore even small increases could have the potential to act in-combination. Prior to the Hornsea 3 OWF decision (which required compensatory measures), in-combination impacts had already reached a level where an AEOI could not be ruled out. As a result, particularly when considered with impacts from other soon-to-be submitted OWF proposals, additional impacts from Rampion 2 risk furthering the adverse effect.		already submitted a without-prejudice derogations case for compensation for kittiwake at FFC, which is welcomed. At present, Natural England considers a collaborative approach with other developers to deliver additional nest spaces on an Artificial Nesting Structure (ANS) is the most promising option, though further detailed information is required before the measure can be considered secured. Please see our Detailed Comments for Natural England's advice on the derogations case.	and have submitted a letter of intent signed by the Dogger Bank South Wind Farms project (see **Cover Letter** submitted with the Applicant's Pre Examination Procedural Deadline Submission **[PEPD-001]**) confirming their intention to participate in such a collaborative approach to the Examining Authority. The Applicant welcomes further comments from Natural England on this proposal, in the event that a AEoI cannot be ruled out.
B4	Assessment - Guillemot and Razorbill in-combination assessment – Flamborough and Filey Coast SPA	The Applicant has not carried out a thorough in-combination assessment for guillemot and razorbill for FFC SPA. The Applicant states that the project-alone impacts are so small that they do not make a material contribution towards AEoI. At the Hornsea 4 Examination, NE advised that AEoI could not be ruled out for these two species in-combination with other plans and projects, and there is the potential for effects from Rampion 2 to combine with those from projects likely to be submitted in the near future. Therefore, the effects of Rampion 2 in-combination with other projects should be properly considered, rather than just assuming the contribution is not material.		The Applicant should carry out a full in-combination assessment of impacts for guillemot and razorbill at FFC SPA, to allow NE to advise further regarding the risks of adverse effects in-combination	As presented within Table 7-10 of the **Report to Inform Appropriate Assessment** **[APP-038]**, based on the Applicant's approach to assessment of both auk species the level of impact apportioned to the qualifying auk features of the FFC SPA was approximately a single breeding adult per annum. When considering the level of potential effect, likely potential connectivity between the project and the SPA and the favourable status of the two auks at the SPA, the Applicant concluded that the potential for an impact of approximately a single additional breeding adult per annum could confidently be concluded as a non-material contribution to any in-combination assessment. However, the Applicant acknowledges Natural England's request and will proceed to undertake an updated in-combination assessment for the requested sites and features to be submitted at Deadline 1 - **Appendix 14 - In Combination Assessment Update for Guillemot and Razorbill** **(Document reference 8.31.14)**.
B5	Assessment - Guillemot in-combination assessment – Farne Islands SPA	The Applicant has not carried out a thorough in-combination assessment for guillemot for the Farne Islands SPA. Natural England advised Marine Scotland that the Berwick Bank OWF that adverse effects on the Farne Islands SPA could not be ruled out due to impacts on guillemot from that project alone, and other consented /proposed projects could also impact the site. Therefore, there is the potential for effects from Rampion 2		The Applicant should carry out a full in-combination assessment of impacts for guillemot at the Farne Islands SPA, to allow NE to advise further regarding the risks of adverse effects in-combination	As presented within **Table 7-10** of the **Report to Inform Appropriate Assessment** **[APP-083]**, based on the Applicant's approach to assessment of guillemot the level of impact apportioned to the Farne Islands SPA was approximately a single breeding adult per annum. When considering the level of potential effect, likely potential connectivity between the project and the SPA and the favourable status of guillemot at the SPA, the Applicant concluded that the potential for an impact of approximately a single additional breeding adult per annum could confidently be concluded as a non-material contribution to any in-combination assessment.

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Ref	Section	Natural England Comments	RAG	Recommendations	Applicant's Response
		to combine with those from Berwick Bank and other North Sea projects, and this should be properly considered, rather than just assuming the contribution is not material.			However, the Applicant acknowledges Natural England's request and will procced to undertake an updated in-combination assessment for the requested sites and features has been submitted at Deadline 1 - **Appendix 14 - In Combination Assessment Update for Guillemot and Razorbill (Document reference 8.31.14).**
B6	Assessment Conclusion	The Applicant concludes no AEoI for any feature, alone or in-combination. Whilst we agree for the project alone for all species, Natural England advise that AEoI cannot be excluded for kittiwake at FFC SPA. Further, until a full in-combination assessment is carried out, we are unable to advise whether we can rule out AEOI for guillemot and razorbill at FFC SPA, and guillemot at the Farne Islands SPA.		See comments above.	As presented within **Table 7-8** of the **Report to Inform Appropriate Assessment [APP-038]**, the level of impact apportioned to the kittiwake feature of the FFC SPA was predicted to be less than a single breeding adult per annum. When considering the level of potential effect, likely potential connectivity between the project and the SPA and the recent breeding success observed in the latest colony counts, the Applicant concluded that the potential for an impact of less than a single additional breeding adult per annum could confidently be concluded as a non-material contribution to any in-combination assessment. However, the Applicant acknowledges Natural England's request and will proceed to undertake an updated in-combination assessment for the requested sites and features this has been submitted at Deadline 1 - **Appendix 14 - In Combination Assessment Update for Guillemot and Razorbill (Document reference 8.31.14).** With respect to the guillemot feature of the FFC SPA please see Applicant's response to Comment B4 and of the Farne Islands SPA Comment B5.
Document used: [APP-053] 6.2.12 Rampion 2 ES Volume 2 Chapter 12 Offshore and intertidal ornithology.					
B7	Table 12-16	Natural England notes that breeding season Biologically Defined Minimum Population Scales (BDMPS) figures are presented using our approved method, alongside the alternative method proposed by the Applicant. In the case of great black-backed gull, guillemot, and razorbill, the Applicant's method employs the greatest annual BDMPS figure, and the Applicant has chosen to take this forward to compare annual predicted mortalities against. Natural England does not support this and considers that either the breeding season figure using our approved method or the largest non- breeding season BDMPS from Furness (2015) should be used. We note the differences are relatively minor and should not result in a material change to the impact totals.		The Applicant should use, as a reference population, either the breeding season population from Natural England's advised method or the largest BDMPS population from Furness (2015), whichever is larger.	The Applicant welcomes confirmation that the approach to calculation of the breeding BDMPS follows Natural England's approved method. With respect to the alternative method employed by the Applicant, this builds on the Natural England method by including consideration of seabirds associated with non-UK colonies. Given the location of the Proposed Development, the Applicant considered this to be an appropriate deviation from the approved method, especially considering that non-UK seabirds designated sites have been screened in and assessed within the **Report to Inform Appropriate Assessment [APP-038]**. Although Natural England do not agree with this deviation, the Applicant welcomes Natural England's conclusion that this would not materially affect the conclusions drawn within **Chapter 12: Offshore and intertidal ornithology, Volume 2 [APP-053]**.

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Ref	Section	Natural England Comments	RAG	Recommendations	Applicant's Response
B8	12.13.93	The purpose of the PVA was to model the cumulative impacts for gannet, rather than project alone, so it is unclear why the results are presented in the project alone section.		The results of the PVA for gannet should be presented in paragraph 12.15.84, where the combined cumulative impacts for gannet on a BDMPS scale are given.	The Applicant undertook PVA analysis for gannet prior to Natural England's updated interim guidance on avoidance rates. When the new guidance was incorporated within cumulative assessments, the baseline mortality rate increase fell below the 1% threshold for PVA requirement. However, it was considered the information would still be beneficial to include within the EIA to further validate the Applicant's conclusions, hence being included within the alone assessment for gannet.
B9	12.13.126	There appears to be a mistake in this section. The predicted annual number of collisions for herring gull due to the Project alone is stated here to be 634, and the PVA has been carried out on that basis. Previously, in paragraph 12.13.122, it was given as 63. Natural England requires clarification on this.		Please provide clarification and amend, as necessary.	The Applicant can confirm that the predicted collisions for herring gull should be 63 (62.62) individuals per annum, as highlighted. Subsequently the inclusion of PVA within the alone section was applied in error due to the typo. As summarised within Table 12-38 of **Chapter 12: Offshore and intertidal ornithology, Volume 2** **[APP-053]**, when considering the correct alone impact value of 63 individuals per annum, the increase baseline mortality does not exceed the 1% threshold requirement for further investigation of potential population consequences through PVA**.** This has been added to the Errata submitted at Pre Examination Procedural Deadl (see **Cover Letter** **[PEPD-001]**).
B10	Table 12-45, Table 12-46, Table 12-47, Table 12-48, Table 12-49, Table 12-50, Table 12-51	In the cumulative impact assessment for gannet, guillemot, razorbill, kittiwake, great black-backed gull, and lesser black-backed gull, breeding season impacts appear to have been screened out for most other projects. This is presumably due to the breeding season reference population comprising adults within foraging range of Rampion 2, plus immatures from the preceding BDMPS season. Natural England does not agree with this method. It is not clear why this appears to have been done for the species mentioned above, but not herring gull.		The Applicant should clearly explain their method for undertaking cumulative impact assessments and the rationale behind which figures are included. Natural England advises that the impacts for all projects within the relevant BDMPS for all seasons should be included in the cumulative impact assessment. This is particularly important for lesser black-backed gull and great black-backed gull, were the threshold of a 1% increase in mortality has been exceeded even without inclusion of these breeding season impact figures, and for gannet, guillemot, and razorbill, where Natural England already considers that there is a cumulative EIA level impact for the North Sea and Channel BDMPS.	Please see the Applicant's response to Comment B1 above.

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Ref	Section	Natural England Comments	RAG	Recommendations	Applicant's Response
B11	Table 12-49	The cumulative impact assessment for kittiwake contains numerous data gaps and cannot be considered comprehensive. However, given the total collision mortality estimates, as presented, amount only to a 0.27% increase in baseline mortality, and given the wind farm projects for which data are missing are generally small, we consider that the true cumulative impact is unlikely to exceed a 1% increase in baseline mortality across the UK Western waters and Channel BDMPS.		No further action – Natural England simply wishes to state that the methodology used here would not be appropriate for other cases where impacts were more likely to arise on seabird receptors.	The Applicant has undertaken cumulative assessments using the best available data though notes that due to the age of some of the projects no quantitative data were available for inclusion within cumulative assessments. However, the absence of data does not mean that the Applicant did not exclusively exclude such older projects when concluding cumulative assessments. Of the 11 such historic projects in question, six were fully commissioned between 2003 – 2010, and the remaining five were commissioned between 2011 – 2015. Given a significant amount of time has passed since these historic projects were commissioned and fully operational, any level of effect would already be impacting against the baseline population for which assessments are assessed against and, therefore, already accounted for in the baseline environment. Considering the above information, the Applicant welcomes and agrees with Natural England that the cumulative impact would not exceed a 1% increase in baseline mortality across the UK Western waters and Channel BDMPS.
B12	12.15.55 – 12.15.70	Natural England does not agree that the cumulative impact of Rampion 2 and other projects on great black-backed gull across the UK South-west & Channel BDMPS is not significant. A 1.99% increase on baseline mortality is significant in Environmental Impact Assessment (EIA) terms, and the PVA results show that, this would severely impact the regional population, resulting in a population 19% smaller than the counterfactual after 30 years. The Applicant has not considered the magnitude of this result. The statement that while the national population is declining, the Isles of Scilly Special Protection Area (SPA) population is increasing, is inaccurate. Initial indications from the results of SPA surveys carried out this year indicate that the SPA population has been in decline since 2015. While many of the figures presented by other wind farms may be precautionary, the Applicant has not taken into account the fact that the cumulative assessment contains numerous data gaps from older wind farms. We advise this is considered further. Natural England disagrees with the Applicant's suggestion that the contribution of Rampion 2 to the		Natural England disagrees with the Applicant's suggestion that the contribution of Rampion 2 to the cumulative total is small. Rampion 2 contributes 19.8 collisions out of a total of 90.5, and therefore, of the 20 projects listed in the cumulative assessment (of which only 8 have figures available – Table 12-50), Rampion 2 contributes 22%.	Please see the Applicant's response to Comment B2 above.

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Ref	Section	Natural England Comments	RAG	Recommendations	Applicant's Response
		cumulative total is small. Rampion 2 contributes 19.8 collisions out of a total of 90.5, and therefore, of the 20 projects listed in the cumulative assessment (of which only 8 have figures available – Table 12-50), Rampion 2 contributes 22%.			
B13	8.5.31	Natural England does not agree that the contribution of Rampion 2 to the in-combination assessment of collision risk to kittiwake, as a feature of Flamborough and Filey Coast SPA (FFC SPA), is so small that it is of no consequence. Prior to the Hornsea 3 OWF decision (which required compensatory measures), in- combination impacts had already reached a level where an AEOI could not be ruled out. As a result, particularly when considered with impacts from other soon-to-be submitted OWF proposals, additional impacts from Rampion 2 risk furthering the adverse effect.		Natural England advises that further discussion with the Applicant is necessary to define and agree an appropriate compensation package for kittiwake in relation to the FFC SPA. See our comments on the derogation case below.	Please see the Applicant's response to Comment B3.
B14	In combination Assessment	Natural England agrees with no AoEI in- combination for gannet in relation to FFC SPA (0.66-0.85 adult mortalities per annum).		No action needed.	The Applicant welcomes Natural England's agreement that an AEoI can be ruled out for the gannet feature of the FFC SPA for the project alone and in-combination.
B15	8.6.33-8.6.34	Natural England agrees with no AoEI in-combination for Lesser black-backed gull (LBBG) in relation to Alde-Ore Estuary SPA, as it has been predicted that there would be less than one adult mortality across the entire lifetime of the project (predicted annual collision rate of 0.018 LBBG from the SPA per annum).			The Applicant welcomes Natural England's agreement that an AEoI can be ruled out for the lesser black-backed gull feature of the Alde-Ore Estuary SPA for the project alone and in-combination.
B16	Appendix E 28. Matrix 24	Natural England note that the Applicant has screen out great black-backed gull from the Habitats Regulations Assessment (HRA) in relation to Littoral Seino-Marin SPA, on the basis of perceived low collision risk with turbines. We advise that this species is at high risk of collision with turbines and therefore we advise that advice is sought from the French authorities in relation to the decision to screened this out.		We advise that advice is sought from the French authorities in relation to this screening decision.	The Applicant has engaged with the French Authorities with respect to any transboundary effects. A further email asking for information on the Littoral Seino-Marin SPA has been sent to the French Authorities prior to Deadline 1.

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Ref	Section	Natural England Comments	RAG	Recommendations	Applicant's Response
B17	7.5.319 – 7.5.326, 8.5.19	Natural England does not agree with the Applicant that adverse effect on integrity can be ruled out for Flamborough and Filey Coast SPA due to impacts on guillemot and razorbill in- combination with other projects. We do not accept that the project alone apportioned impacts are so low that there is not a detectable contribution to the in-combination effect. At the Hornsea 4 Examination, Natural England advised that AEoI could not be ruled out for these two species in-combination with other plans and projects, and there is the potential for effects from Rampion 2 to combine with those from projects likely to be submitted in the near future. Therefore, the effects of Rampion 2 in- combination with other projects should be properly considered, rather than just assuming the contribution is not material.		A full in-combination assessment of impacts should be presented for guillemot and razorbill for Flamborough and Filey Coast SPA. Natural England should be consulted on the results of this assessment, at which point we can advise on whether AEoI can be excluded.	Please see the Applicant's response to Comments B4 and B6 above.
B18	8.5.12	Natural England does not agree with the Applicant that adverse effect on integrity can be ruled out for the Farne Islands SPA due to impacts on guillemot in-combination with other projects. We do not accept that the project alone apportioned impacts are so low that there is not a detectable contribution to the in-combination effect. Natural England advised Marine Scotland that the Berwick Bank OWF that adverse effects on the Farne Islands SPA could not be ruled out due to impacts on guillemot from that project alone, and other consented /proposed projects could also impact the site. Therefore, there is the potential for effects from Rampion 2 to combine with those from Berwick Bank and other North Sea projects, and this should be properly considered by the Applicant, rather than just assuming the contribution is not material.		A full in-combination assessment of impacts should be presented for guillemot for the Farne Islands SPA. Natural England should be consulted on the results of this assessment, at which point we can advise on whether AEoI can be excluded.	Please see the Applicant's response to Comment B5 above.
Document used: [APP-039] 5.10 Rampion 2 Habitats Regulations Assessment (Without Prejudice) Derogation Case					

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Ref	Section	Natural England Comments	RAG	Recommendations	Applicant's Response
B19	General	Natural England notes that the Applicant has presented a without-prejudice derogation case describing options for compensating for potential AEoI on kittiwake for Flamborough and Filey Coast. The most promising opportunity is the provision of additional nest spaces on an existing or proposed Artificial Nesting Structure (ANS) through a collaborative approach. This intervention is likely to be practicable and proportionate to the level of risk and given any AEOI will be in-combination with other projects, a collaborative approach is logical and appropriate. At present, insufficient details on the proposals are provided for the compensatory measures to be considered secured. We also consider that a Marine Recovery Fund (MRF) payment could provide an opportunity to contribute to strategic compensatory measures in the future but highlight that at present the MRF is not in place, and that limited information on the likely scope and delivery mechanism of the Fund is available. Therefore, it may be that at the point of decision-making, the Secretary of State may not have sufficient confidence in the MRF to mandate its use as a compensatory measure. The other measures set out in paragraph 6.2.27 of the derogations document are of uncertain merit and/or may be challenging to implement or effectively monitor, and therefore are not worth progressing further at this stage.		We recommend that the Applicant develop the collaborative ANS option further, and that specific proposals (i.e., confirmed location of the ANS to be used, number of nest spaces to be provided etc.) are submitted into the Examination in due course through an updated Kittiwake Implementation and Monitoring Plan (KIMP). The Applicant should stay abreast of any progress with the MRF and update the Examination (and the derogations case) as required.	The Applicant is continuing to progress a collaborative approach to deliver additional nest spaces on an Artificial Nesting Structure (ANS) and have submitted a letter of intent signed by the Dogger Bank South Wind Farms project confirming their intention to participate in a such a collaborative approach to the Examining Authority (see **Cover Letter [PEPD-001]**). The Applicant welcomes further comments from Natural England on this proposal, in the event that a AEoI cannot be ruled out. If additional details of the Marine Recovery Fund are published, the derogations documents will be updated accordingly.
B20	3.2.2	As noted above, Natural England is not able to provide advice on the potential for AEOI on the guillemot and razorbill features of FFC SPA and on the guillemot feature of the Farne Islands SPA without a full in-combination assessment being provided.		As above.	Please see Applicant's response to Comment B4 and B5 above.

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Ref	Section	Natural England Comments	RAG	Recommendations	Applicant's Response
B21	6.2.32	Natural England does not generally support further deployment of onshore ANS, given the number of nest spaces that consented and submitted developments have already installed or are required to install in the future. As a result, we do not support the proposition that the recently installed onshore ANS on the River Tyne at Gateshead would provide appropriate compensation for the Dogger Bank South projects, noting that these 2 large Round 4 projects have not been tested through the Examination process. However, given the predicted level of contribution to in-combination effects, we do consider this ANS could provide compensatory benefits that would be proportionate to less impactful 'extension' projects such as Rampion 2.		To note.	The Applicant welcomes confirmation that onshore ANS could provide compensatory benefits that would be proportionate to less impactful 'extension' projects such as the Proposed Development in the event that a AEoI cannot be ruled out.

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Table 4-8 Applicant's Response to Natural England - Appendix C (Marine Mammals)

Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
C1	Project Description	The number of piles and pile locations per day needs to be clarified.		Natural England advises the WCS is clarified in terms of number of piles and pile locations per day.	The Worst-Case Scenario for spatial impacts is 2 concurrent monopiles in a day at the E and W modelling locations in the array area as stated in **Section 4** of **Appendix 11.3 Underwater noise assessment technical report, Volume 4 [APP-149].** The Worst-Case Scenario for the number of piles is 360 pin piles for WTG and 36 pin piles for the Offshore Substations, this results in a total of 396 pin piles and 99 piling days with 4 pin piles per day as stated in the MDS Table 11-13 of **Chapter 11: Marine Mammals, Volume 2 [APP-052]**.
C2	NE Position on Worst Case Scenario (WCS)	The worst-case spatial extent of the noise impact (particularly for disturbance) requires review.		We advise the WCS noise impact spatial extent is reviewed.	The Applicant confirms the Worst-Case Scenario has been reviewed. The worst-case scenario is the piling of 2 monopiles concurrently (simultaneously) at the E and W locations within the array area, as this has the largest spatial effect for marine mammals as stated in **Section 4** of **Appendix 11.3 Underwater noise assessment technical report, Volume 4 [APP-149]** and Table 11-13 of **Chapter 11: Marine Mammals, Volume 2 [APP-052].**
Baseline Characterisation					
C3	Data Suitability and baseline characterisation	The survey data have not been used for the final baseline parameters (e.g. density, abundance) taken forward to the assessment; instead, the literature has been used.			The Applicant confirms the site-specific survey data was not the worst-case density, therefore it was not carried forward into the quantitative assessment. The reasoning for which density estimates were used for each species is detailed in Sections 3.9, 4.9, 6.9, and 7.9 and summarised in Table 10-1 of **Appendix 11.1: Marine mammal baseline technical report, Volume 4 [APP-147].**
C4	Data Gaps	Date from the recent literature on bottlenose dolphin is required.		We advise the bottlenose dolphin baseline is characterised based on the recent literature.	The marine mammal baseline (**Appendix 11.1 Marine mammal baseline technical report [APP-147]**) was drafted in 2021, therefore the Applicant recognises that this document is outdated at the time of Application. The key change since the drafting of the baseline is the change in the bottlenose dolphin Management Units. At the time of writing the baseline, Rampion 2 was located within the Offshore Channel and SW England Management Unit. The boundary of the **Coastal West Channel Management Unit** was revised by the IAMMWG in 2023 (after the baseline was

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
					finalised). Rampion 2 is now located partly within both the new boundary of the Coastal West Channel Management Unit and the **Offshore Channel and SW England Management Unit**. Impacts from the Project therefore cross into the 2 Management Units. Assuming the reference population is updated to be the combined MUs, this results in a reference population of: **40 dolphins from CWC + 10,653 dolphins from OCSW = 10,693 bottlenose dolphins.** This is almost the same as the reference population size used in the ES assessment **Chapter 11: Marine Mammals, Volume 2 [APP-052]** which was 10,497 dolphins, and thus is not considered to be significantly different. No changes to the magnitude of any impact pathway would occur when considering the new reference population size. The Applicant will commit to providing an updated baseline for bottlenose dolphin at Deadline 2. Please refer to response C28 for further details.
Environmental Impact Assessment					
C5	Identified impacts	We are satisfied that all impacts have been identified.		N/A	This is welcomed by the Applicant.
C6	Definitions for magnitude and sensitivity	We have concerns over the definitions used.		We advise the definitions are revised and updated in the assessment.	The Applicant notes this comment and has addressed the concerns in the specific comment responses in the Overarching Comments section of this document, see responses CA1, CA2, CA3 and CA4.
C7	Cumulative Effect Assessment Screening	We deem the projects included to be appropriate.		N/A	This is welcomed by the Applicant.
C8	Cumulative Effect Assessment Impacts	It is unclear whether all the relevant projects have been included in the assessment of cumulative disturbance to harbour porpoise.		We advise a review of the projects included in the assessment and revise if necessary	The Applicant confirms that there was an error in Table 11-37 of **Chapter 11: Marine Mammals, Volume 2 [APP-052]**, and that some non-UK projects and Scottish projects in the CEA longlist that are located in the North Sea Management Unit were accidently omitted from the harbour porpoise CEA when it was updated prior to Application.

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					The projects missing from the porpoise CEA are: 8 Scottish projects, 1 Belgian project, 3 French projects, 6 Dutch projects, 2 Norwegian projects, 2 Danish projects and 7 German projects. The Applicant has provided a revised cumulative effect assessment for the harbour porpoise North Sea MU at Deadline 1.This has been incorporated into the updated **Chapter 11: Marine Mammals, Volume 2** of the ES **(document reference 6.2.11)**.
C9	Cumulative Effect Assessment Conclusions	Unable to agree at this stage due to the above comments.		We advise Natural England's concerns are addressed in an updated assessment.	This Applicant notes the concerns raised on the CEA conclusions. The Applicant confirms the error in Table 11-37 of **Chapter 11: Marine Mammals, Volume 2** **[APP-052]** and that a revised assessment will be submitted at Deadline 1. This has been incorporated into the updated **Chapter 11: Marine Mammals, Volume 2** of the ES **(document reference 6.2.11)**.
Habitats Regulations Assessment					
C10	Screening	We are satisfied that all sites/receptors have been identified.		N/A	This is welcomed by the Applicant.
C11	Methodology (impact)	We are satisfied that all impacts have been identified.		N/A	This is welcomed by the Applicant.
C12	Assessment Conclusions	All marine mammal SACs have been screened out at Stage 1, no LSE.		N/A	This is welcomed by the Applicant.
Mitigation Summary					
C13		The embedded environmental measures outlined by the Applicant (in Table 11-14 in the ES Chapter 11 Marine Mammals) should be secured in the DCO/dML. Specifically: • C-51 (Vessel Management Plan) – this should be secured for all phases of the project. • C-52 (piling Marine Mammal Mitigation Plan). • C-102 (UXO Clearance Marine Mammal Mitigation Protocol) We note that the Table 11-14 details that C-51 and C-52 will be secured in the DCO or dML conditions.			The Applicant confirms that Commitment C-51 is secured in Condition 11(1)(f) of the draft dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009])**. The Applicant confirms that Commitment C-52 is secured in Condition 11(1)(l) of the draft dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009])**, should driven or part-driven pile foundations be used. The Applicant confirms that Commitment C-102 is secured in Condition 11(1)(m) of the draft dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-**

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
		C-102 will be secured through the application for UXO clearance works marine licence. Natural England query whether this secures that the final MMMP will be in accordance with the Draft MMMP submitted with this Application. There are also two other commitments Natural England strongly support in Table 11-14 and welcome the proposal to secure these in the dML: • C-265 (piling noise mitigation technology). • C-275 (low order detonations)			**009])**. The Applicant also confirms that when the Marine Licence for UXO clearance works application is made, should this be required, the final MMMP will be drafted in line with the **Draft Piling Marine Mammal Mitigation Protocol** **[APP-236]** submitted with the Application for the Proposed Development. The Applicant notes that, should driven or part-driven pile foundations be used, the use of piling noise mitigation technology (Commitment C-265) will be confirmed within the final version of the **In Principle Sensitive Features Mitigation Plan** **[APP-239],** which will be submitted to and approved in writing by the MMO as secured in Condition 11(1)(k) of the draft dMLs (Schedules 11 and 12 of the **draft DCO**) **[PEPD-009]**. The Applicant notes that should UXO clearance be required, the use of low order methods to dispose of UXOs using deflagration will be used where practicable (Commitment C-275) (as secured in Condition 11(1)(m) of the draft dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009])**. The Applicant also confirms that when the Marine Licence for UXO clearance works application is made, should this be required, the final MMMP will be drafted in accordance with **the Draft Piling Marine Mammal Mitigation Protocol** **[APP-236]** submitted with the Application for the Proposed Development as secured in Condition 11(1) (m) of the draft dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009])**.
C14		Other plans: • Draft Marine Mammal Mitigation Plan -this plan is necessarily high level and has a suitable list of potential mitigation measures. The Applicant should clearly state the soft start/ramp up profile that will need to be adhered to. • Offshore In-Principal Monitoring Plan – the marine mammal section is lacking and should be revised as per the detailed comment. • Outline Vessel Monitoring Plan (VMP) – we request to see an outline VMP as the Applicant			The Applicant confirms that both the soft start/ramp-up will be detailed in the final Piling MMMP, which is to be submitted to approved in writing by the MMO as secured in Condition 11(1)(l) of the draft dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009])**. The Applicant has provided **Appendix 10 – Further Information for Action Point 42 - Proximity to Marine Wildlife** **(Document reference 8.31.16**) at Deadline 1 which details the mitigation measures relied upon within the assessment presented in **Chapter 11: Marine Mammals, Volume 2** **[APP-**

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
		is relying on the VMP and mitigation measures therein in their assessment conclusions.			**052].** This document will form part of the final VMP, the provision of which is secured in Condition 11(1)(f) of the draft dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]).** The comment on the Offshore In-Principal Monitoring Plan is addressed in the Applicant's response to comment **C56**.
Overarching comments					
		Firstly, the sensitivity rating that corresponds to each of the definitions has changed; the terms have been qualitatively downgraded. To illustrate, the definition that previously corresponded to medium sensitivity now corresponds to low sensitivity. Secondly, the actual definitions of the sensitivity ratings have changed. To illustrate, the definition of medium sensitivity at the PEIR stage stated, "some tolerance – effect unlikely to cause a change in both reproduction and survival rates." In the application, the equivalent statement for low sensitivity PEIR is "some tolerance – no significant change in individual vital rates (survival and reproduction)". Important here is the addition of the "significant level" as a threshold, which was not present in the definition at PEIR. In practice, this means that a sensitivity rated "high" at the PEIR stage, can in the submitted ES be determined to be 'not significant' and so result in a low sensitivity. This has significant ramifications for the impact assessment. We advise that our comments in our main overarching letter regarding the way overall significance has been derived from the matrix are also taken into account. Action: Define what a "significant level" of change is, in the context of the definitions of medium and low sensitivity. Review the sensitivity assigned in the individual impact assessments, and provide robust, transparent justification for the final sensitivity			The Applicant confirms that the sensitivity ratings have been renamed from Very High, High, Medium, and Low to High, Medium, Low, and Very Low. Regarding the change in the definitions of sensitivity between PEIR and ES, the Applicant acknowledges this may have caused some confusion. This was an oversight following consideration of specific questions relating to the impacts of PTS – and has resulted in a lack of clarity in the presentation of the assessment ratings. To clarify - the reference to significance in 'Sensitivity definition' was designed to clarify the likelihood of event impacting the vital rates of an individual. As is standard, 'Magnitude' addresses the consequence of any impact at a population level (see Magnitude definitions). The use of the term 'significance' in the Sensitivity definition was intended to correlate to 'non-negligible' or to distinguish from 'inconsiderable' or more 'trivial' effects. The Applicant can see how the use of this term has detracted from the focus of the 'Sensitivity' element of the assessment – which (as stated above) is related to the **likelihood** of an event occurring. Crucially, the Applicant can confirm the overall assessment result is the same using either the PEIR or ES application definitions.
		There is little distinction between the definitions of low and medium magnitudes, leading to subjective conclusions.			The Applicant confirms there has been no change to the definition of magnitude between PEIR and ES. The four levels have been renamed from Major,

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
		The definition of medium magnitude does not make reference to a proportion of the population affected, unlike the definition for low magnitude, which states a small proportion of the population. It is therefore not clear what proportion of the population would need to be affected to be considered medium magnitude. Both low and medium definitions reference some effect to reproductive success but not enough to affect the population trajectory. The distinction between low and medium in reference to this parameter is unclear. Action: The definitions of low and medium magnitude should be made clearer and/or the justification for one chosen magnitude over another should be made more robust in the species-specific assessments.			Moderate, Minor, Negligible to High, Medium, Low, Very Low with the definitions remaining the same. In Table 11-16 in **Chapter 11: Marine Mammals, Volume 2 [APP-052]**, Medium magnitude is defined as a **lifetime change** in reproductive success and Low magnitude is defined as a **short-term change** in reproductive success.
		Note that the defined terminology for magnitude should be used consistently throughout the document. The Applicant has not defined "negligible" magnitude and so this term should not be used in the assessment.			The Applicant confirms that negligible is not defined terminology for magnitude and that these should be Very Low. This is corrected in the 'Errata' submitted at Deadline 1.
		It is stated that the VMP will be developed pre-construction. However, the Applicant is relying upon the VMP to reduce the residual magnitude to "Very Low" and so conclude no significant effect from vessel-related pathways. An outline VMP should be submitted into the Examination, so Natural England can appraise its likely effectiveness. Action: Provide an outline Vessel Management Plan.			This document will form part of the final VMP, the provision of which is secured in Condition 11(1) (f) of the draft dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]).**
Document used: [APP-052] Volume 2, Chapter 11: Marine Mammals					
C15	General	The Applicant should ensure that any changes, following comments, made to the supporting documents (e.g. marine mammal baseline technical report, marine mammal quantitative underwater noise assessments) are carried through to the Environmental Statement sections where relevant.		To note.	The Applicant ensures that all amendments have been recorded and are noted in the Errata. An updated version of **Chapter 11: Marine Mammals, Volume 2** of the ES **(Document reference 6.2.11)** has been submitted at Deadline 1, in accordance with Agenda Item 43 of Issue Specific Hearing 1.

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
C16	Table 11-2	Natural England have not had sight of the draft European Protected Species (EPS) licence application.		The Applicant should consult Natural England on the draft EPS licence application (expected post- consent). Natural England advise that this is considered sufficiently far in advance of the licence being required to ensure sufficient mitigation measures are in place, and for us to advise on any further measures that might be required. We would welcome sight of a draft as soon as possible	The Applicant will submit an EPS licence application in the post-consent phase once details of the final design are understood and Natural England, the MMO and other relevant Statutory Nature Conservation Bodies ('SNCBs') will be consulted on the application. The Applicant notes the request to consider providing a draft in advance of licence being required to allow for advice on mitigation measures, however appropriate mitigation measures will be set out at the time the EPS licence application is made.
C17	Table 11-13	There is a discrepancy in the number of pin pile foundations required for offshore substations; both 18 and 36 are listed in this table.		The Applicant should clarify the correct maximum number of pin piles for the offshore substation.	The Applicant can confirm that the reference to 18 pin pile foundations is incorrect. The correct number of pin pile foundations for offshore substations is 36. This has been amended in the updated version of **Chapter 11: Marine Mammals** submitted at Deadline 1.
C18	Table 11-13	Vessel disturbance may also occur when the vessels are in proximity to land during transit to/from ports. The Applicant should include information on known or likely ports and transit routes for the Rampion 2 project and should use this information to identify any seal haul out sites nearby that could be at risk of disturbance.		The Applicant should detail known or likely port options, and proximity to known seal haul outs.	The maintenance port and facilities will be located in Sussex, and it is assumed that all direct labour will be resident within the area. It is likely that the existing facilities at Newhaven Port will be utilised (and expanded where necessary) as the base for operations management of Rampion 2, as this will yield synergies and enable effective coordination with the existing operations team on Rampion 1. Further information regarding the Applicant's intentions for the additional facilities at Newhaven Harbour are provided in the response to Issue Specific Hearing 1, agenda item 50 in the **Applicant's post hearing submission - Issue specific hearing 1 (Document reference 8.25).** The closest known haul out sites for and grey seals are in the Solent around Langstone harbour and Chichester harbour. Newhaven port is located more than 80 km from both Langstone harbour and Chichester harbour, therefore disturbance at haul outs has not been assessed in the ES as there are likely no significant effects due to the distance in the operational phase. For the construction phase a single port has not been chosen and it is likely numerous ports in UK and Europe will be used.

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
C19	Table 11-14	Whilst we welcome a commitment like C-275 regarding low order methods, we consider that the wording should be made stronger. This would align it with the imminent update to the joint position statement: https://www.gov.uk/government/publications/marine-environment-unexploded-ordnance-clearance-joint-interim- position-statement on Unexploded Ordnance (UXO) clearance. The statement will outline that low noise methods have to be the primary method of clearance.		The Applicant should revise wording of commitment C-275.	The Applicant welcomes the comment from Natural England however the wording of C-275 in **Chapter 11: Marine Mammals, Volume 2** of the ES **[APP-052]** and the **Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Protocol [APP-237]** (as secured in Condition 11(1)(m) of the draft dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009])** has not been changed. The current commitment wording states that *"the use of low order detonations to dispose of Offshore UXOs using the 'deflagration method' will be implemented, where practicable".* Therefore, low order clearance is deemed to be the first approach taken with all confirmed UXOs (cUXO), and only if it isn't possible would high order clearance be undertaken. The stages to be included in this process are the UXO campaign to determine if cUXO and the size, then to determine the method that would be appropriate for clearance. Low order clearance would be attempted on all cUXO deemed appropriate and if failed high order would only be undertaken after multiple failed attempts. The clearance of UXO will be controlled through a separate Marine Licence
C20	Table 11-31	The percentage of the Management Unit (MU) affected does not tally with the number of individuals affected for bottlenose dolphin and common dolphin.		The Applicant should review the numbers in Table 11-31.	The Applicant notes this error and confirms that this has been amended to 0.72% of the bottlenose dolphin MU and 0.35% of the common dolphin MU. This has been incorporated into the updated **Chapter 11: Marine Mammals, Volume 2** of the ES **(Document reference 6.2.11)**.
C21	11.9.85	As highlighted by the Applicant, it is possible that vessel traffic could result in hauled out animals flushing into the water. Therefore, the project should commit to best practice measures that reduce the likelihood of this occurring as part of a Vessel Management Plan (VMP).		The VMP should include best practice measures to reduce the risk of seals flushing due to vessel disturbance.	The Applicant has included best practice measures in **Appendix 10 – Further Information for Action Point 42 - Proximity to Marine Wildlife (Document reference 8.25.10**) submitted at Deadline 1. This document will form part of the final VMP (as secured in Condition 11(1)(f) of the draft dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009])**.

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C22	11.10 (general)	Disturbance to seal haul out sites at landfall should also be assessed against the use of operation and maintenance (O&M) vessels over the lifetime of the project. The assessment of this impact pathway during construction can conservatively be applied to the impact pathway during the O&M phase. The embedded environmental measure of a VMP covering all phases of the project should reduce the risk of disturbance, subject to having the appropriate measures therein.		The Applicant's assessment should acknowledge that the impact pathway of disturbance to seal haul out sites and landfall can occur during operation and maintenance phase too. A separate assessment is not needed - the one for construction is applicable. The Applicant should clearly commit to following the VMP during the O&M phase.	The Applicant acknowledges that disturbance to seal haul out sites at landfall is an impact pathway during the operation and maintenance phase. The sensitivity of seals to disturbance at haul out sites remains the same as during the construction phase and as such is medium sensitivity. The magnitude of disturbance at seal haul out sites during operation phase is the same as during the construction phase, and as such is very low magnitude. In conclusion, the significance for disturbance at haul out sites during the operation and maintenance phase is minor which is not significant in EIA terms. The Applicant welcomes the comment from Natural England that a separate assessment is not needed and also confirms it will commit to following measures in the Working in Proximity to Wildlife document throughout the operation and maintenance phase. The Working in Proximity to Wildlife document will be submitted at Deadline 1 and will form part of the final VMP (as secured in Condition 11(1)(f) of the draft dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**).
C23	11.10.16	The sensitivity of marine mammals to vessel disturbance should be the same irrespective of the phase of the Project.		The Applicant should ensure sensitivity is the same across Project phase.	The Applicant confirms that sensitivity of marine mammals to vessel disturbance should be the same throughout the lifetime of the Proposed Development, as sensitivity to activities is a species-specific metric irrespective of project phase. The sensitivity of vessel disturbance during operation should be low (instead of very low as had been previously stated) to align with the sensitivity of vessel disturbance during the construction phase. As a result, the significance following the implementation of embedded environmental measures is minor significance. These changes have been captured in the updated version of **Chapter 11: Marine Mammals, Volume 2** of the ES **(Document reference 6.2.11)** submitted at Deadline 1.
C24	Table 11-34	This table should present the relevant species-specific. Management Units that each project is situated in.		The Applicant include the relevant species specific MUs that each project in the cumulative effects assessment (CEA) lies in.	This is noted by the Applicant. Whilst the information was not included in **Table 11-34 of Chapter 11: Marine mammals, Volume 2** **[APP-052]**, the projects in the species specific MUs are included in the individual species assessments in **Table 11-37, Table 11-39, Table 11-41** and **Table 11-43** of

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					Chapter 11: Marine Mammals, Volume 2 [APP-052]. Additionally, **Table 11-45 of Chapter 11: Marine Mammals, Volume 2 [APP-052]** on vessel disturbance CEA lists the projects in the species specific MUs.
C25	Table 11-37	We are concerned that not all relevant projects have been included in the CEA for harbour porpoise disturbance. Table 11-37 presents less than half of the projects listed in Table 11- 35, and at a glance some of the omitted projects are in non-UK parts of the North Sea so should be in the relevant MU for harbour porpoise. The projects taken forward to the CEA should be reviewed to ensure it captures all the relevant ones, and that the impact presented (in terms of percentage of the MU affected) is correct.		The Applicant should review the projects taken forward to the CEA for harbour porpoise and update the assessment accordingly.	The Applicant confirms the error in Table 11-37 in **Chapter 11: Marine Mammals, Volume 2 [APP-052]**, and that some non-UK projects and Scottish projects in the CEA longlist that are located in the North Sea Management Unit were accidently omitted from the harbour porpoise CEA when it was updated prior to Application. The projects missing from the porpoise CEA are: 8 Scottish projects, 1 Belgian project, 3 French projects, 6 Dutch projects, 2 Norwegian projects, 2 Danish projects and 7 German projects. The Applicant has provided a revised cumulative effect assessment for the harbour porpoise North Sea MU at Deadline 1. This has been incorporated into the updated **Chapter 11: Marine Mammals, Volume 2** of the ES **(Document reference 6.2.11)**.
Document used: [APP-147] Volume 4, Appendix 11.1: Marine mammal baseline technical report					
C26	General comment	The complete results of the site-specific digital aerial surveys have not been presented in the application. These should be presented for review		The Applicant should provide a separate document that has the complete results of the site-specific digital aerial surveys.	The Applicant has submitted the final two years DAS survey report: **Ornithological and Marine Mammal Aerial Survey Results of Rampion 2 - 2021 [Document reference 8.33]** to the Examination at Deadline 1.
C27	General comment	In the site-specific surveys there were many sightings of unidentified species (unidentified dolphin; unidentified dolphin/porpoise; unidentified seal etc.). These unidentified species have not been allocated to the identified species in the baseline characterisation. We advise that the worst-case scenario is to assume that all unidentified observations could be the specific constituent species. For example, all unidentified seals could be both harbour seals or grey seals, and so should be included in the density estimate for both harbour and grey seals. However,		The Applicant should allocate the unidentified species to specific species, then present the updated densities from the site-specific digital aerial surveys.	The site-specific surveys were not the worst-case density estimates for any species and therefore were not carried forward into the quantitative impact assessment therefore apportioning of unidentified species is not required. It is an acceptable approach to assume that all unidentified small cetacean sightings are harbour porpoise in the more offshore central/southern North Sea as dolphins are considered rare in this area. However, this is not the case at the Proposed Development where there is a known mix of small cetacean species in the area (dolphins and porpoise).

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		we are open to the Applicant proposing alternate ways to allocate unidentified species if preferred.			The Proposed Development surveys recorded: • 25 harbour porpoise • 23 dolphin/porpoise • 2 unknown dolphins • No bottlenose dolphins The identification rate in the site-specific surveys was so low that it was inappropriate to assign unidentified sightings to species level. They were deemed to be inappropriate to use in the quantitative impact assessment. For both harbour and grey seals, the most appropriate at-sea density estimate is considered to be the Carter et al. (2020,2022) habitat preference maps.
C28	2.2.1	Updated Management Unit boundaries were reviewed and published in March 2023. The relevant change to this project is the eastward extension of the Coastal West Channel (CWC) MU boundary for bottlenose dolphin. The Rampion 2 project now overlaps this MU. The Applicant must undertake their assessment relative to this updated MU.		The Applicant should update assessment of bottlenose dolphin so that it reflects that updated CWC MU that now overlaps with the Rampion 2 area.	The marine mammal baseline (**Appendix 11.1 Marine mammal baseline technical report [APP-147]**) was drafted in 2021, therefore the Applicant recognises that this document is outdated at the time of Application. The key change since the drafting of the baseline is the change in the bottlenose dolphin Management Units. At the time of writing the baseline, Rampion 2 was located within the Offshore Channel and SW England Management Unit. The boundary of the **Coastal West Channel Management Unit** was revised by the IAMMWG in 2023 (after the baseline was finalised). Rampion 2 is now located partly within both the new boundary of the Coastal West Channel Management Unit and the **Offshore Channel and SW England Management Unit**. Impacts from the Project therefore cross into the 2 Management Units. Assuming the reference population is updated to be the combined MUs, this results in a reference population of: **40 dolphins from CWC + 10,653 dolphins from OCSW = 10,693 bottlenose dolphins.** This is almost the same as the reference population size used in the ES assessment **Chapter 11: Marine Mammals, Volume 2 [APP-052]** which was 10,497 dolphins, and thus is not considered to be significantly different. No changes to the magnitude

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					of any impact pathway would occur when considering the new reference population size. The Applicant will provide an updated baseline for bottlenose dolphin at Deadline 2.
C29	Table 4-3	The density estimates presented in Table 4-3 do not reflect the latest picture of bottlenose dolphin abundance in this region, which has increased recently due to the expansion of a semi- resident inshore population (Corr, 2020; IAMMWG, 2023). The Applicant should update the population estimates accordingly. One approach to calculating density, which we suggest the Applicant presents, is to assume uniform density of bottlenose dolphin in the extended CWC MU.		The Applicant should review sources of bottlenose dolphin density that could reflect the recent changes in distribution. The Applicant should present bottlenose dolphin density in the CWC MU assuming uniform distribution.	There is a lack of density estimates for bottlenose dolphins in the Coastal West Channel Management Unit. • Assuming a uniform distribution of dolphins within the Coastal West Channel Management Unit, the density estimate would be 40 dolphins/ MU area of 18,685.3 km^2 = **0.002 dolphins/km^2**. • This is substantially lower than the density used in **Chapter 11: Marine mammals, Volume 2 [APP-052]** which was 0.037 dolphins/km^2. The Applicant therefore considers that the density estimate used for bottlenose dolphins in the ES remains precautionary and appropriate.
C30	5.8	Natural England agrees that, based on the information presented, white-beaked dolphin can be scoped out of the assessment.		Agreement.	This is welcomed by the Applicant.
C31	7.9	The Applicant has stated that, for minke whale, they will use the Small Cetaceans in the European Atlantic and North Sea III (SCANS-III) data for the density estimate, even though this is not the highest estimate. We note the highest estimate is found in the Software Assurance Maturity Model (SAMM) survey; 0.012 whales/km^2 in summer. It is unclear why the justification for using the SCANS-III data over the SAMM survey is applicable to minke whale but no other species e.g., common dolphin.		The Applicant should clarify why the SAMM survey source/the most precautionary has not been used for minke whale density or use the most precautionary density estimate.	SCANS-III (Hammond et al., 2017) density for minke whales was selected as it was the more recent survey compared to the SAMM surveys (Laran et al., 2017). The SAMM surveys were conducted in the winter between November 2011 and February 2012 and in the summer between May and August 2012, whereas the SCANS III survey was conducted between June and August 2016. Therefore, SCANS III provides a more recent and therefore appropriate density estimate for the area. SAMMS survey data (Laran et al., 2017) was used for bottlenose dolphins because no bottlenose dolphins were sighted in SCANS III block C (Hammond et al., 2017). SAMMS survey data (Laran et al., 2017) were used for common dolphins because no common dolphins were sighted in SCANS III block C (Hammond et al., 2017).

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C32	Figure 8.1	There appear to be 9 sightings on this figure, yet Table 8-1 only list a total count of 5. This difference should be clarified.		The Applicant should clarify the difference in count between the figure and the table.	**Table 8.1 Appendix 11.1: Marine mammal baseline technical report, Volume 4 [APP-147]** presents the counts of all seal species sighted over the two years of surveys that could not be identified to a species level and **Figure 8.1 Appendix 11.1: Marine mammal baseline technical report, Volume 4 [APP-147]** presents the locations of sightings of all seals species. The Applicant notes the error in **Table 8.1 Appendix 11.1: Marine mammal baseline technical report, Volume 4 [APP-147]** and confirms that this has been corrected to 7 sightings of unidentified seal species: 3 in July 2019, 1 in December 2019, 1 in February 2020, 1 in March 2020 and 1 in August 2020. The total number of 9 sightings in **Figure 8.1 Appendix 11.1: Marine mammal baseline technical report, Volume 4 [APP-147]** is correct when considering the total number of seal species identified: 7 unidentified seal species sightings and the 2 sightings of grey seals that were positively identified. This is corrected in the 'Errata' submitted at Deadline 1.
C33	8 and 9	The Applicant has not presented the final density which they intend to use for harbour and grey seal. This should be specified here. It is noted that Table 10-1 states the density estimate will be grid cell specific. This information should be provided in Sections 8 and 9, and the approach clarified e.g., is the highest grid cell density in the 25 km radius of Rampion 2 being used, or the density within the zone of impacts?		The Applicant should clarify in Sections 8 and 9 what density(s) will be used in the assessment.	The assessment of the number of seals impacted by pile driving activities was conducted by overlaying the underwater noise impact contours on the seal spatially explicit density surface, extracting all grid cells within the disturbance contours and calculating the number of animals present within the contours. Therefore, the assessment did not use a single uniform density to estimate number of animals impacted but used a density surface within which density changed spatially over the grid cells.
C34	9.3.5	The reference population for grey seals has been calculated based on the combined population of the South and Southeast England Seal MUs, rather than 50% of this combined total. This departs from Natural England's advice in paragraph 8.3.1.		The Applicant should update the grey seal reference population in accordance with Natural England's previous advice.	This approach was advised by Natural England for harbour seals **only** given the limited ranging behaviour of the species. Given the much larger ranging behaviour of grey seals, it is typical to assume a reference population is multiple MUs, as is presented in **Chapter 11: Marine mammals, Volume 2 [APP-052]**.
Document used: Volume 4, Appendix 11.2 Marine mammal quantitative underwater noise impact assessment [APP-148]					

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C35	General Para 2.3.3 *et seq*	This document does not appear to have been updated with the revised Maximum Design Scenario (MDS) e.g., it still refers to 116 turbines. All documents should reflect the submitted MDS.		The Applicant should review and update document accordingly.	The Applicant notes this error and confirms the revised MDS is 90 WTG, and this is corrected in the Errata submitted at Deadline 1. As there are fewer turbines it will result in fewer piling days and there will be less impact. Therefore, no change is required to the conclusions in **Chapter 11: Marine mammals, Volume 2 [APP-052]**.
C36	3.4.2	The first sentence states that most piling noise energy is between 30 – 500Hz, with some noise extending above 2kHz. The research quoted does not include any low frequency species, such as minke whale, and the summary of research by Finneran et al., 2015, only includes tests of noise above 1- 2kHz. We therefore consider that the Temporary Threshold Shift (TTS) notch at 2-10kHz is unlikely to be applicable to minke whales, as the tests used to ascertain this notch did not use the primary frequencies of piling noise that occur within the peak hearing range of minke whales (<1kHz).		Review the sensitivity of minke whale to piling noise, particularly addressing the points made.	The PTS expert elicitation report (Booth & Heinis, 2018) provides a summary of the potential effect of piling noise on mammalian hearing and summarises the judgments of 7 world leading experts on marine mammal hearing and noise. The first day of the workshop was spent scoping the current state of knowledge of threshold shifts in response to low frequency broadband sound sources (before later focusing on species-specific judgments as part of the elicitation process). The experts agreed that "*it was important to realise that reduced hearing ability does not necessarily mean a less fit animal (i.e. an animal of lower fitness)*." The elicitation included harbour and grey seals – two species with good low frequency hearing. Following a review and discussion of the current literature, experts determined: *"**Following exposure to low frequency broadband pulsed noise, TTS was typically observed 1.5 octaves** (see Appendix 1 - Glossary) **higher than the centre frequency of the exposure sound** for seals and porpoise (Kastelein et al. 2012a, Kastelein et al. 2012b, Kastelein et al. 2013a, Finneran 2015). For piling noise and airgun pulses, most energy is between ~30 Hz- 500 Hz, with a peak usually between 100 – 300 Hz and energy extending above 2 kHz (e.g. Kastelein et al. 2015a, Kastelein et al. 2016)".* **Based on this, the experts concluded that if piling noise resulted in a threshold shift, that this would manifest in the mammalian ear as a notch in hearing sensitivity somewhere between 2-10 kHz.** This assessment was not species-specific and was considered to apply to all marine mammals (including minke whales) based on the best available

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					knowledge (TTS studies involving low frequency broadband pulsed noise stimuli). The low frequency noise produced during piling may be more likely to overlap with the hearing range of low frequency cetacean species such as minke whales. Minke whale communication signals have been demonstrated to be below 2 kHz (Edds-Walton 2000, Mellinger et al. 2000, Gedamke et al. 2001, Risch et al. 2013, Risch et al. 2014). Tubelli et al. (2012) estimated the most sensitive hearing range (the region with thresholds within 40 dB of best sensitivity) to extend from 30 to 100 Hz up to 7.5 to 25 kHz, depending on the specific model used. Ongoing studies to directly estimate the hearing of live minke whales provide initial results suggesting *"minke whales have a much higher frequency limit to their hearing range than previously believed based upon their ear anatomy and the frequencies at which they vocalize."* (Houser, *pers comm.)* Booth & Heinis (2018) highlighted that experts considered that if PTS occurs, this would occur as a notch in hearing loss in a narrow frequency band (occurring somewhere between 2-10 kHz). They stressed this was not a loss of hearing across this entire band. Booth & Heinis (2018) also summarised the mechanisms experts considered as to whether PTS could significantly affect vital rates: *"In considering how any PTS could affect vital rates (i.e. probability of survival, probability of fertility), experts discussed the mechanisms by which this could occur. In general, experts noted that where communication has a significant social or reproductive function, that this might be a means by which survival and/or reproduction are affected.* ***Experts noted however that PTS would likely occur over a small frequency range and that much of the energy of communication signals either fell outside the likely range affected by PTS or that the loss of part of the signal would likely not affect detection of the communication signals."***

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					The Applicant acknowledges that data on minke whale hearing and potential effects of threshold shifts on vital rates are lacking. However, given the current understanding of how PTS from piling is expected to manifest in the mammalian ear – and the mechanisms that could lead to an effect on vital rates (*sensu* Booth & Heinis, 2018)- the Applicant considers that it is unlikely that vital rates would be altered in a biologically meaningful way as a result of PTS from piling. Therefore, the Applicant maintains the sensitivity of minke whales to PTS from piling should be Low. It is noted however, that if the sensitivity of minke whales to PTS from piling was to be increased, then the following would apply, and the impact would remain not significant: • Mitigated magnitude: Very Low • Sensitivity: Medium • Significance: Minor (not significant)
C37	3.5.3	Natural England notes that The Wash harbour seal population has undergone a 20-30% decline in the last 5 years. Therefore, the Applicant's justification that the sensitivity is low due to the increasing Wash harbour seal population despite offshore wind farm construction in the region should be reviewed.		The Applicant should review the sensitivity of harbour seal to piling noise, particularly addressing the points made	The sentence in 3.5.3 of **Appendix 11.2: Marine mammal quantitative underwater noise impact assessment, Volume 4** **[APP-148]** states "*The Wash harbour seal population has been increasing over this period*". The period being referred to (as stated in the preceding paragraph) was the last 10 years as presented in Russell et al., 2016 (so 2006-2016). The Applicant agrees that the SE England harbour seal population is now in decline. However, it is not known what is causing this decline. Therefore, there is no evidence to suggest that the sensitivity of harbour seals to PTS needs to be increased as a result of the current decline.

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C38	5.2.9	The Applicant has assumed that in the worst-case temporal impact is 1 day per location. We query whether this should be higher to accommodate the use of pin piles. How likely is it that 4 pin piles would be installed every day on which there was piling? Whilst not the worst-case scenario, we also query the temporal worst-case scenario for 2 monopiles being installed per day.		The Applicant should review the worst-case number of pin piles (and monopiles) installed per day, potentially using other offshore wind farms as evidence.	The Applicant confirms the worst case for pin piles assumes that an entire four-leg multileg foundation can be installed by a piling rig, or up to two monopiles in a 24-hour period. It is not expected that more than two full multileg foundations will be driven in a day in the event that two rigs are operating, and the underwater noise assessment has been undertaken on this basis.
Document used: [APP-149] Volume 4, Appendix 11.3 Underwater noise assessment technical report.					
C39	General	In the text the Applicant has stated that up to 2 monopiles and 4 pin piles may be installed in a 24-hour period (Section 3.2.2). However, the Applicant appears to have modelled simultaneous and sequential piling occurring within a 24-hour period (Tables 4-31 and 4-33). If both sequential and simultaneous piling is within the envelope, then theoretically up to 4 monopiles or 8 jacket pin piles could be installed in a 24- hour period (and indeed this is what is stated as the worst-case scenario in Appendix 11.2). The worst-case piling scenario in a 24-hour period must therefore be clarified and modelled. It should also be clarified whether a maximum of 2 locations may be installed in a 24-hour period. We note that there is a similar lack of clarity on this matter in relation to fish, and we understand that simultaneous piling was not consented for Rampion 1.		The Applicant should clarify the piling worst-case scenario, ensure it is modelled and used consistently throughout all assessment documents.	The Applicant confirms that the assessment assumes a worst-case scenario of two piling rigs, which could in theory each install two monopiles or four pin piles in a 24-hour period.
C40	3.2	Cumulative effects have been considered with piling at the East and West locations. However, it is stated that the worst-case propagation occurs at the South and East locations (Section 4). We query whether the east and west locations are the worst- case in terms of spatial extent of underwater noise impact. Should this instead be south and east (or another location)? This may make a difference to the noise impacts that occur over larger spatial scales (e.g., disturbance assessment using noise contours).		The Applicant should ensure that the worst-case spatial extent for noise impacts from simultaneous piling has been modelled and update the assessments accordingly.	The Applicant notes that whilst the S and E locations would have the greatest impact ranges individually, in combination they would have a significant overlap, reducing the maximum total area. Therefore, the Applicant confirms that the greatest cumulative ranges were assessed to be from the combined East and West locations.

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C41	4.3	The acoustic deterrent device (ADD) duration is typically based on the permanent threshold shift (PTS) range. If the impact range is not presented for simultaneous piling, we query how an appropriate ADD duration can be calculated. The Applicant should consider this. The ADD is an important part of the mitigation measures and an appropriate duration is needed to demonstrate that its usage can reduce impacts to acceptable levels.		The Applicant should present an approach to determining appropriate ADD duration for simultaneous piling.	The Applicant highlights that there is no accepted definition for how to define a PTS range for multiple simultaneous piling locations. Where an ADD could theoretically cause fleeing towards a second piling location, this cannot be mitigated by an ADD. Therefore, the ADD duration for simultaneous piling has not been presented.
C42	5.1	Natural England notes that the underwater noise modelling has assumed a worst-case of a maximum 12 hours of operation in any 24-hour period. Evidence needs to be provided to support this assumption.		The Applicant should provide evidence to confirm assumption that piling construction noise does not occur for more than 12 hours at a time.	The Applicant notes the request to confirm the position in modelling that piling would not occur for more than 12 hours, and would like to clarify that the reference to 12 hours of noisy operation in section 5 of **Appendix 11.3: Underwater noise assessment technical report [APP-149]** refers to the 'other noise sources' such as dredging and cable laying, and does not cover piling. Modelling of piling is covered in Section 4.1, 4.2 and 4.3 and includes for a maximum 4 piles installed in a day, each of which could take 4.5 hours, for a total of up to 18 hours.
C43	5.3	Natural England expects that low order methods and/or noise abatement systems will be included in the suite of mitigation measures for UXO clearance. It would therefore be beneficial to model likely underwater noise impacts from these.		The Applicant should model impact ranges from low order UXO clearance and abated UXO clearance.	The Applicant will include the noise modelling for low order UXO clearance and using noise abatement systems in the post-consent UXO MMMP. The modelling will be undertaken before the commencement of the works licensed by the dMLs and submitted as part of the UXO clearance Marine Licence application.
C44	5.4	The Applicant should use a maximum UXO weight of 750 kg in their modelling, as per Natural England's best practice advice Environmental considerations for offshore wind and cable projects – Home (sharepoint.com) (this should also be updated in relation to fish).		The Applicant should model the impact ranges from a 750 kg UXO as the worst-case scenario.	Given the close proximity of Rampion 2 to Rampion 1, a charge weight of 525kg has been used as the maximum worst case charge weight for the project based on the previous charges found at Rampion 1. This is therefore the maximum that has been considered in **Appendix 11.3: Underwater noise assessment technical report, Volume 4 [APP-149].** The Applicant will review the UXO clearance noise modelling at the post-consent stage as part of the UXO clearance Marine Licence application.
Document used: [APP-038] Volume 5, 5.9 Report to Inform Appropriate Assessment					

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C45	Executive Summary	Natural England agree that no English sites with marine mammal designated features are required to be taken to Stage 2 of the Habitats Regulations Assessment (HRA) i.e., Likely Significant Effect can be screened out.		Agreement.	The Applicant welcomes Natural England's agreement that no English sites with marine mammal designated features are required to be taken to Stage 2 of the Habitats Regulations Assessment (HRA).
Document used: [APP-236] 7.14 Draft Piling Marine Mammal Mitigation Protocol.					
C46	Tables 2-1 and 2-2, Paragraph 5.1.30	The Joint Nature Conservation Committee (JNCC) guidelines for piling mitigation state that the soft start should be a minimum of 20 minutes. It is therefore not appropriate to have a soft start that is 7.5 minutes. The terminology used should match that in the guidelines and clearly demonstrate that the guidelines are being adhered to.		The Applicant should review mitigation terminology to ensure it matches and demonstrates accordance with the guidelines: https://data.jncc.gov.uk/data/31662b6a-19ed-4918-9fab-8fbcff752046/JNCC-CNCB-Piling-protocol-August2010-Web.pdf	The Applicant highlights that the JNCC (2010) guidance (**Appendix 3**) states: "The soft-start is the gradual ramping up of piling power, incrementally over a set time period, until full operational power is achieved. The soft-start should be a period of not less than 20 minutes." Thus, the "soft-start" is defined by JNCC as the time before full operational power is achieved. For both monopiles and pin-piles, the full time before operational power is achieved is 30 minutes as detailed in **Table 3-2, Table 3-3 and Table 3-4** of **Appendix 11.3 Underwater noise assessment technical report, Volume 4** [APP-149] and **Table 11-13** of **Chapter 11: Marine Mammals, Volume 2** **[APP-052]**. The 7.5 minutes identified in the piling parameters is only the initial phase of this overall soft-start period before full hammer energy is reached.
C47	General	We welcome the inclusion of at-source noise abatement methods in the draft MMMP, however, limited current evidence on the noise reduction of various systems and their efficacy in the environmental characteristics of the site that may affect their deployment.		The Applicant should ensure that the final MMMP considers bottlenose dolphin.	The Applicant is undertaking additional work to provide a comparison of the environmental conditions at the Proposed Development with other projects where Noise Abatement Systems (NAS) have been deployed, this will be submitted to the Examination in due course.
C48	5.1.16	Recent evidence has shown an increased presence of bottlenose dolphins in the Rampion 2 area (see our comment on the ES) and so they could be present on-site during piling activities. This species should therefore be considered when selecting the final mitigation measures for piling.		The Applicant should ensure that the final MMMP considers bottlenose dolphin.	The Applicant notes the evidence highlighted by Natural England. The **Draft Piling Marine Mammal Mitigation Protocol** **[APP-236]** include modelling of impact ranges for high frequency cetaceans which includes bottlenose dolphins. The final MMMP (as secured in Condition 11(1)() of the draft dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009])** for piling submitted in the plost-consent stage will include impacts and mitigation for bottlenose dolphins.

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C49	5.1.30	The MMMP should explicitly outline the soft start/ramp up procedure that has been modelled as the worst-case, and state that this soft start/ramp up profile will not be exceeded. This will ensure that the worst-case impact ranges are not exceeded.		The Applicant should explicitly outline the soft start/ramp up profile in the MMMP and commit to not exceeding this profile.	The soft-start/ramp up procedure is presented in the ES. This will be added into the **Draft Piling Marine Mammal Mitigation Protocol [APP-236]** at Deadline 1.
Document used: [APP-237] 7.15 Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Protocol.					
C50	General	There are some details not presented in the UXO MMMP (but are presented in the piling MMMP). These include the outline ADD durations, and evidence on the reduction of noise from mitigation technologies. This information would be beneficial to present in the MMMP.		The Applicant should consider this for the final UXO MMMP, to be developed at the post-consent stage.	The Applicant acknowledges the information highlighted should have been presented in the **Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Protocol [APP-237]** ADD duration and efficiency of selected noise abatement systems will be detailed in the final UXO MMMP developed in post-consent stage.
C51	2.1.9	We note that the maximum charge weight differs from Natural England's best practice advice; 525kg rather than 750kg has been used. We advise that the measures in the draft UXO MMMP are sufficient up to the 525kg maximum charge weight that has been selected. If a UXO with a higher charge weight is found, the mitigation measures would likely need revising.		The Applicant should consider this for the final UXO MMMP, to be developed at the post-consent stage.	The Applicant welcomes the advice from Natural England on this matter. A maximum charge weight of 525 kg was selected based on a review of UXO sizes found that required clearance at Rampion 1. Given the area is low risk for UXO, this was deemed an appropriate maximum charge weight for the underwater noise impact assessment. The Applicant acknowledges the point regarding the mitigation measures in the **Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Plan [APP-237]** only being sufficient for UXO up to 525 kg. The Applicant will review the best practice advice and the UXO clearance noise modelling at the post-consent stage as part of the UXO clearance Marine Licence application and update if required.
C52	3.1.7	For clarity, we do not consider that an application for an EPS licence contributes to the risk of PTS being negligible. Indeed, an EPS licence is only sought if there is still a residual risk of an offence occurring after the application of mitigation (in this case, PTS or an injury offence). By seeking an EPS licence, the Applicant is acknowledging that there is still a risk of PTS occurring; therefore, the risk is not negligible.		The Applicant should consider this for the final UXO MMMP, to be developed at the post-consent stage.	The Applicant welcomes the advice on EPS licencing, satisfactory alternatives test, low order techniques and noise abatement systems for UXO clearance. The final UXO MMMP will be in line with the latest positions statements on UXO.

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
		When applying for an EPS licence the Applicant will need to demonstrate that all satisfactory alternatives have been considered. The Applicant is already committing to the use of the low order clearance technique "deflagration" which we support. We advise that this technique (or a similar well-evidenced low order technique) is used as the preferred option for UXO clearance. Should high order clearance be needed, we advise that this is undertaken with noise abatement e.g., a bubble curtain. For the current position on UXO clearance please see https://www.gov.uk/government/publications/marine-environment-unexploded-ordnance-clearance-joint-interim- position-statement Note that this position statement is likely to be updated before the UXO MMMP is finalised. The latest position statement should be used to inform the final UXO MMMP			
C53	5.2.10	Natural England advise that UXO clearance is only undertaken during conditions that are conducive to visual monitoring (i.e. not during periods of fog, or high sea state (≥SS4). We do not recommend that PAM is solely relied on as mitigation for UXO clearance. For UXO clearance, PAM may be used to supplement visual observations only.		The Applicant should include this clarification in the final UXO MMMP, to be developed at the post-consent stage.	The Applicant welcomes the advice on mitigation measures for UXO clearance. As UXO can only be carried out in conditions that allow for visual monitoring, the Applicant will clarify the mitigation in the final UXO MMMP to only using PAM to supplement visual monitoring not as a stand-alone mitigation.
C54	5.2.13	Recent evidence has shown an increased presence of bottlenose dolphins in the Rampion 2 area (see our comment on the ES) and so they could be present on site during piling activities. This species should therefore be considered when selecting the final mitigation measures for UXO.		The Applicant should consider this for the final UXO MMMP, to be developed at the post-consent stage.	The Applicant notes the evidence highlighted by Natural England. The **Draft Piling Marine Mammal Mitigation Protocol [APP-236]** and **Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Protocol [APP-237]**) include modelling of impact ranges for high frequency cetaceans which includes bottlenose dolphins. The final MMMPs for UXO clearance submitted in the post-consent stage will include impacts and mitigation for bottlenose dolphins.

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C55	5.2.21	The statement here by the Applicant does not mention the possibility of high order clearance without bubble curtains. We recommend that the Applicant consider committing to no unabated high order UXO clearance (should high order be required). As per our comment above the efficacy of noise abatement measures in the environmental conditions that exist at the Rampion 2 site should also be considered.		The Applicant should consider this for the final UXO MMMP, to be developed at the post-consent stage.	At the post-consent stage, the Applicant will follow the latest mitigation guidelines and advice from SNCBs. When considering potential Noise Abatement Systems, the site and environmental conditions will be taken into consideration as well.
Document used: [APP-240] 7.18 Offshore in Principle Monitoring Plan					
C56	General	At present, the only post-consent monitoring that has been proposed is the industry-standard monitoring of underwater noise from the first 4 piles. However, monitoring undertaken as part of the MMMP should not be considered as post-consent monitoring as it does not meet the objective of validating impacts. Natural England are concerned that no monitoring has been outlined that would evidence the impacts to marine mammals e.g., monitoring of animal responses to impacts, including mitigated impacts. We highlight that some of the impact pathway assessments factor in mitigation to conclude no significance, therefore validating the effectiveness of the mitigation is a reasonable aim for post-consent monitoring. There has been no consideration of the areas of the assessment where assumptions have been made and where the project could contribute to filling knowledge gaps that would inform the project's assessment. Further detailed discussion is required on the monitoring plans. We understand that this is proposed to occur post-consent. However, at present we have limited understanding, and therefore low confidence, in how the monitoring will evidence the outcomes of the marine mammal assessments.		The Applicant should revise the In Principle Monitoring Plan (IPMP) in discussion with Natural England.	The Applicant confirms the only underwater noise monitoring in the **Offshore in Principle Monitoring Plan [APP-240]** is the industry standard monitoring of the first 4 piles and notes that this is not considered post-consent monitoring by Natural England. The monitoring proposed in **Offshore in Principle Monitoring Plan [APP-240]** will be used to validate the impact ranges presented in the post-consent MMMP. The Applicant welcomes Natural England's detailed comments on the **Offshore In Principle Monitoring Plan [APP-240]** to be submitted at Deadline 1 and will continue to collaborate with Natural England to develop the **Offshore In Principle Monitoring Plan [APP-240]** (as secured in Condition 11(1)(j) of the draft dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]).**

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Table 4-9 Applicant's response to Natural England - Appendix D (Coastal Processes)

Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
Project Parameters					
D1	NE Position on Worst Case Scenario (WCS)	In most cases Natural England agree with the position on WCS, except the following: • Impacts to the seabed due to spud legs, anchoring and propeller wash. • Maximum design scenario (MDS) sandwave clearance width and length. • Suspended sediment, plume concentration, extent, orientation, and subsequent deposition footprint. • Chalk drill arising nature and evolution. • Changes to tidal conditions due to the scheme layout(s) alone or cumulatively with Rampion 2. • Changes to the sediment transport regime due to the scheme layout(s) alone or cumulatively with Rampion 2. • Temporary sand/gravel bed impacts in shallow water.		Natural England advises the Applicant to provide the necessary updated project parameters, evidence and assessment in updated Application documents as discussed in detailed comments.	Individual points made in the detailed comments are addressed separately below. These specific identified potential pressures/impacts are considered by the Applicant to be accounted for and included within the MDS envelope for each potential impact type (e.g., seabed disturbance associated with cable burial, sandwave levelling, changes to the wave regime, changes to patterns of currents, landfall activities and infrastructure, scour) in **Chapter 6: Coastal Processes, Volume 2 [APP-047]**.
Baseline Characterisation					
D2	Data Suitability and baseline characterisation	There is a lack of post-construction evidence from Rampion 1 included in the impact assessment.		All best available evidence should be used to inform the Rampion 2 application. Therefore, Natural England advises the Applicant to include relevant lessons learned and post-construction evidence from Rampion 1 in the updated impact assessment. Natural England advises that an updated S is submitted with definitions for the significance of effect for Coastal Processes. See our detailed comments for specific points on magnitude, sensitivity, and effect significance	The Applicant notes that Rampion 1 and the Proposed Development are two distinct projects and entities. However, there is ongoing dialogue between the two projects/entities and information generated by Rampion 1 has been and is being taken into account by The Applicant. Regarding Rampion 1 post-construction monitoring data specifically, it is the Applicant's understanding that the reports for the first two years of monitoring have been submitted to the respective discharging authorities in August 2023 and that these have not yet been approved. Therefore, the evidence within such reports is still confidential and not yet in the public domain and as such, should not form the basis for this

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
					representation. Additionally, the reports have not yet been signed off by the discharging authorities and are therefore subject to change. The evidence from the Rampion 1 post-construction reports is not yet available for the Proposed Development to include in the ES, due to the reasons mentioned above.
D3	Data Gaps	• Up-to-date, post-Rampion 1 installation suspended particulate matter (SPM) data, if available. • Overlapping wake effects with Rampion 1. The analysis is generally appropriate. However, we request further clarification on the following: • Bathymetry and measured wave data that underpin the wave modelling. • Representative current speed in the sediment plume modelling.		Natural England advises that more up-to-date post-Rampion 1 installation data, should be included in updated application documents, if available. Natural England requests that the applicant provides further clarification/rationale within update Application documents.	Please see the Applicant's response to Comment D2 above. In situ SPM levels have not been routinely monitored in the Rampion 1 or the Proposed Development areas, either pre- or post-construction of Rampion 1. The baseline understanding of naturally occurring SPM levels is informed by an analysis of multiple years of satellite derived values, providing better spatial and temporal extent and resolution than would otherwise be available from a limited number of point observations. A wide range of natural variability in local SPM is expected due to the process that drive it (local sediment type, height of sample in water column, recent tidal and wave conditions, etc). No measurable difference in SPM is/was expected due to the presence of Rampion 1 in its present operational phase (also see response D35)**.** As described in **paragraph 6.10.1** onwards of, **Chapter 6: Coastal processes, Volume 2 [APP-047]**, tidal current wake effects are a narrow corridor of slightly reduce speed and proportionally elevated turbulence, that rapidly recovers towards ambient conditions with distance downstream from each foundation. Each wake extends downstream in the order of only metres wide when measurable. For two wakes to overlap, the effect would need to: 1) remain measurable over the distance between foundations (many hundreds of metres); and 2) happen to coincide spatially. Both conditions are highly unlikely to result in any meaningful additive effect other than that already described for all of the individual foundations (for the Proposed Development and Rampion 1) (also see response D37)**.** The wave modelling undertaken to inform assessments of potential impacts on wave height is informed by project specific bathymetry in the Rampion 1 and the Proposed Development array areas, as well as other regional scale data sources. Three locations of measured wave data from the Rampion 1 metocean survey were used to validate the long term hindcast data that were used to define the specific wave scenarios actually (also see response D38 and D39).

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
					For a given total volume and rate of sediment disturbance, there is a proportional relationship between the ambient current speed and the resulting plume concentration, extent and thickness of deposition at certain distances. The representative case provided by a 0.5m/s current speed is experienced frequently by all locations in the array area and ECC. Other current speeds are possible, but there are a very large range of possible local values. The assessment provides the basis for a proportional understanding of differences in this respect (also see the Relevant Representation submitted by Natural England **D41**)
Environmental Impact Assessment					
D4	Identified impacts	The following potential pressures/impacts have not been considered/assessed: • See those listed in the WCS section above. • Pre-lay grapnel run (PLGR), UXO and boulder clearance. • Impacts to the sandwave field within the array area and their recovery. • Impacts on Kingmere MCZ due to changes in the wave regime. • Impacts to sandbanks and sandwaves due to changes in the tidal regime. • Extent and magnitude of overlapping wakes between Rampion 2 and Rampion 1. • Impacts in the nearshore, inter-tidal and shallow areas due to the presence of cable protection measures during operation. • Palaeo-channel infill substrate scour.		Natural England advises that an updated ES is submitted which includes and assess these pressures/impacts across the EIA	These specific identified potential pressures/impacts are considered by the Applicant to be accounted for and included within the assessments and MDS envelope for each potential impact type (e.g. seabed disturbance associated with cable burial, sandwave levelling, changes to the wave regime, changes to patterns of currents, landfall activities and infrastructure, scour) in Sections 6.9 and 6.10 of **Chapter 6: Coastal processes, Volume 2 [APP-047].** Potential impacts were assessed to be not significant. Pre-lay grapnel run (PLGR), UXO and boulder clearance are addressed in response D12. Impacts to the sandwave field within the array area and their recovery are addressed in responses D15 and D31. Impacts on Kingmere MCZ due to changes in the wave regime is addressed in response D19. Impacts to sandbanks and sandwaves due to changes in the tidal regime are addressed in response D26. Extent and magnitude of overlapping wakes between Rampion 2 and Rampion 1 is addressed in response D27. Impacts in the nearshore, inter-tidal and shallow areas due to the presence of cable protection measures during operation. are addressed in response D25. Palaeo-channel infill substrate scour is addressed in response D36.

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
D5	Definitions for magnitude and sensitivity	The definitions of magnitude and sensitivity are acceptable for this assessment only. However, it is worth noting that Chartered Institute of Ecology and Environmental Management (CIEEM) (2018) avoid and discourage use of the matrix approach and categorisation. There are a number of category assessments for Coastal Processes which have been downplayed, resulting in a lower significance of effect. We also note that the definitions for significance of effect have not been provided for Coastal Processes. There are also inconsistencies in the criteria for magnitude of change used in Chapters 5 and 6.		Natural England advises that an updated S [sic] is submitted with definitions for the significance of effect for Coastal Processes. See our detailed comments for specific points on magnitude, sensitivity, and effect significance.	The Applicant notes that alternative assessment methodologies are described in the wider literature. However, the magnitude/sensitivity categories and definitions, and the resulting matrix of significance of effect used in relation to **Chapter 6: Coastal processes, Volume 2 [APP-047]** is consistent with the majority of other contemporary and historical assessments for other offshore wind farms. The change would not affect the conclusions of the assessment and so there would be no material benefit in submitting an updated assessment. The significance of effect is the result of the combination of the assessed magnitude and sensitivity inputs and is not normally separately defined for this topic. The other detailed comments (of Natural England) regarding the conclusions of magnitude /sensitivity / significance of effect are addressed in the responses below on a case-by-case basis.
Cumulative Effect Assessment Screening					
D6	Cumulative Effect Assessment Impacts	Climping Beach SSSI and the adjacent stretch of coast at landfall are vulnerable, fragile, and susceptible to erosion. Consequently, we have concerns regarding potential impacts due to the presence of cable protection measures in the nearshore and intertidal, export cable installation, and asset integrity through the lifetime of the project. In light of the latest coastal flooding at Climping Beach and surrounding area, we also question whether sufficient consideration has been given to the resilience of infrastructure to coastal change/flooding		Natural England advises that further consultation with the EA on future beach management plans is required to demonstrate that assets are resilient to coastal change at the landfall area and will remain buried for the lifetime of the project. Natural England advises that the placement of cable protection in shallow nearshore areas should be avoided. Natural England advises that an additional assessment of cable protection measures in shallow nearshore areas using wave modelling should be included within an outline Cable Specification and Installation Plan to be submitted as part of the consenting considerations.	Potential impacts to the coastline at the landfall are assessed in **paragraph 6.9.46** onwards of **Chapter 6: Coastal process, Volume 2 [APP-047]**. The present day and likely future nature of the coastline is accounted for in the assessments of impacts of installation. The actual nature of future coastal change and flood risk is largely subject to wider future coastal protection strategy decisions to be made by the EA and the Applicant has, and will continue to, engage with the EA to understand this further. Further ground investigation will be carried out at the landfall at the post-DCO Application stage as outlined in commitment C-247 (**Commitments Register [APP-254]**) and secured within the **Draft DCO [PEPD-009]** Requirement 26. The ground investigation will inform a 'coastal erosion and future beach profile estimation assessment' which will advise regarding the need for and design of any further mitigation and adaptive measures to help minimise the vulnerability of these assets from future coastal erosion and tidal flooding. To confirm what has been assessed already: Assessment of risks and impacts seaward of MHWS are covered in the offshore assessment(s), and specifically ES **Chapter 6: Coastal Processes, Volume 2, [APP-047]** of

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
					the ES in which coastal processes, including the future coastal erosion / alignment, were considered in more detail. The onshore assessment (**Chapter 26: Water Environment, Volume 2 [APP-067]**) covered the onshore elements of the Proposed Development landward of MHWS and considered tidal flood risk. The Environment Agency geomorphological studies (2020a; 2020b) assessed the likelihood of different coastal evolution scenarios across the coastal frontage. These geomorphological studies were reproduced in **Figure 6.1.9 of Appendix 6.1: Coastal processes technical report: Baseline description, Volume 4 [APP-129]** of the ES. The Environment Agency geomorphological reports were used as a basis to assess the future risk of coastal change to the onshore development (being considered in an onshore coastal change vulnerability assessment). The risk related specifically to the potential exposure of the landfall cables and associated joint bay due to further coastal erosion. Whilst there is noted uncertainty with regards to the anticipated future coastlines presented, a sequential approach has been considered to locate the landfall transitional joint bay on the landward side of the most extreme of these estimates. In a meeting held with the Environment Agency in March 2023, they noted that that short-term changes associated with recent storms are unlikely to have consequences to the validity of the future estimated coastlines at the landfall location. **Chapter 6: Coastal processes, Volume 2 [APP-047]** of the ES concludes that construction and operation and maintenance activities will not significantly impact coastal morphology and offshore sediment transport and therefore the development will not increase the risk of coastal flooding and erosion. On the basis of the assessment undertaken in **Chapter 6: Coastal processes, Volume 2 [APP-047]** and commitment C-247(**Commitments Register [APP-254]**) which secures a coastal erosion and future beach profile assessment via the **Outline Code of Construction Practice (CoCP) [APP-224]** (Table 5-9) (Requirement 22 & 26, Schedule 1 of the **draft DCO [PEPD-009])** the coastal vulnerability of the Proposed Development is considered to be low, for which further mitigation will be identified and implemented post-granting of DCO as necessary.

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					For further information **the draft DCO** Requirement 26 **[PEPD-009]** states that i. No works comprising Work Nos. 6 or 7 are to commence until a coastal erosion and future beach profile estimation assessment has been carried out and a scheme identifying any mitigation or adaptive management measures required to help minimise the vulnerability of this part of the Order land from future coastal erosion and tidal flooding (if required) has been submitted to and approved in writing by the Environment Agency. ii. Any mitigation or adaptive management measures identified as part of the scheme submitted pursuant to (1) above must be implemented as approved. The following embedded environmental measure is in the **Commitments Register [APP-254]**: C-247: RED will undertake ground investigation at the landfall site at the post-DCO application stage. This will be carried out to inform the exact siting and detailed design of the transition joint bay (TJB) and associated apparatus. In addition, this will inform a 'coastal erosion and future beach profile estimation assessment', which in turn will inform the need for and design of any further mitigation and adaptive measures to help minimise the vulnerability of these assets from future coastal erosion and tidal flooding (as secured by Requirement 26, Part 2 of the **draft DCO [PEPD-009]**). A Cable Specification and Installation Plan is also secured by Condition 11(1)(n) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**) which requires *"proposals for monitoring offshore cables including cable protection during the operational lifetime of the authorised scheme which includes a risk-based approach to the management of unburied or shallow buried cables".* The Applicant would like to discuss with Natural England what further consideration it might seek or if this response clarifies the matter. The Applicant notes that the export cable will be installed by Horizontal Directional Drilling and that there will be only underground works in the intertidal area (as secured by Work No. 5— (a) up to four temporary horizontal directional drilling exit pits located seaward of MLWS Schedule 1, Part 1 of the **draft DCO [PEPD-009]).**
D7	Cumulative Effect Assessment Conclusions	Currently, we need further information and/or assessment, as listed above and in our detailed comments before we can agree with any conclusions drawn.		We advise that further information and additional assessment are required, based upon relevant evidence and/or lessons learned from Rampion 1.	A specific DCO commitment to undertake suitable further assessments as part of the engineering design process has also been made in **Table 6-12** of **Chapter 6: Coastal processes, Volume 2 [APP-047]** C-247 (secured by Requirement 26, Schedule 1 of the **draft DCO [PEPD-009])**:

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		Moreover, limited evidence or lessons learned from Rampion 1 have been included in this EIA.			The Applicant will undertake ground investigation at the landfall site at the post-DCO application stage. This would be carried out to inform the exact siting and detailed design of the TJB and associated apparatus. In addition, this would inform a 'coastal erosion and future beach profile estimation assessment', which in turn would inform the need for and design of any further mitigation and adaptive measures to help minimise the vulnerability of these assets from future coastal erosion and tidal flooding. Please see the Applicant's response to Comment D2 above regarding Rampion 1.
Mitigation Summary					
D8		• Scour monitoring to validate ES predictions, including export cable, array(s) and palaeo-channel infill substrate. • Sandbank/sandwave recovery analysis.			For further information, the **draft DCO** Requirement 26 **[PEPD-009]** states that i. No works comprising Work Nos. 6 or 7 are to commence until a coastal erosion and future beach profile estimation assessment has been carried out and a scheme identifying any mitigation or adaptive management measures required to help minimise the vulnerability of this part of the Order land from future coastal erosion and tidal flooding (if required) has been submitted to and approved in writing by the Environment Agency. ii. Any mitigation or adaptive management measures identified as part of the scheme submitted pursuant to (1) above must be implemented as approved. The following embedded environmental measure is in the **Commitments Register** **[APP-254]**: C-247: RED will undertake ground investigation at the landfall site at the post-DCO application stage. This will be carried out to inform the exact siting and detailed design of the transition joint bay (TJB) and associated apparatus. In addition, this will inform a 'coastal erosion and future beach profile estimation assessment', which in turn will inform the need for and design of any further mitigation and adaptive measures to help minimise the vulnerability of these assets from future coastal erosion and tidal flooding (as secured by Requirement 26, Part 2 of the **draft DCO** **[PEPD-009]**). The Applicant would like to discuss with Natural England what further consideration it might seek or if this response clarifies the matter.

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
					Sandbank/ sandwave recovery analysis is addressed in response D31.
Document Used: [APP-045] 6.2.4 Chapter 4 The Proposed Development					
D9	Chapter 4 Section 4.4	We note that Horizontal Directional Drilling (HDD) is to be used to install ducts that will house the cables under Climping Beach. Will any access be required to the beach? Furthermore, will cofferdams be required for the HDD exit pits? And have jointing bay depths taken into account potential changes in sea level and flood defence management over the lifetime of the project.		Natural England advises that further information is required from the Applicant before we can fully advise on the potential impacts. This additional information and associated assessment should be provided within updated Application documents.	It is noted that Climping beach is currently being and will continue to be changed by coastal processes, including changes in sea level. Changes to flood defence management may also occur over the lifetime of the Proposed Development. The land site of the landfall location has been defined with a relatively wide redline boundary to account for observed and potential future changes at Climping beach, enabling a flexible approach to the detailed design work, which will be undertaken after the grant of consent. At the PIER stage a single TJB was consulted on and in response to comments received a second TJB location was included in the second Statutory Consultation exercise (18 October to 29 November 2022) within the Preliminary Environmental Information Report Supplementary Information Report (PEIR SIR). This second TJB location, though further from MLWS, is in a slightly higher location which has an even lower chance of flooding. The joint bay depths will be at same at either location used. The horizontal directional drilling (HDD) will be designed to avoid the need to access Climping beach, principally by the exit pits being located seaward of MLWS. There are no plans for cofferdams to be used for the HDD exit pits and this has not been assessed within the Environmental Statement.
D10	Chapter 4/Table 4-5	Maximum sandwave clearance impact width, for the array and interconnector cables in the array area, is 10m and the maximum length of cables affected by sandwaves is anticipated to be 60km. Are these realistic? In terms of the length of cables likely to be affected by sandwaves, is there evidence from Rampion 1 that can be used to inform this maximum value? Furthermore, of the 60km quoted, what is the proportion of array vs interconnector cable length that is anticipated to be affected by sandwaves?		Natural England advises that further evidence is required to support the realistic WCS parameters and Maximum Design Scenario (MDS) parameters as set out in the DCO/dML. Ideally, this would be included within an Outline Cable Specification and Installation Plan submitted to support the consenting phase	Maximum sandwave clearance trench dimension Maximum Design Scenario ("MDS") has been informed by standard descriptions and protocols for this activity. The base of the trench will have a minimum fixed width that must be achieved to subsequently allow the cable burial tool to pass (which is the purpose of the levelling). Sloped sides to the cleared path will increase the apparent width in proportion to the local depth of sediment cleared (i.e. continuously varying from trough to crest of individual sandwaves). Allowance for this is made in the estimated total volume of sandwave clearance required, also informed by the detailed bathymetry of the project area and the realistic height and number of sandwaves that might be encountered. The estimated values are conservatively determined for the purpose of the EIA (not based on a specific route through specific features).

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					No specific sand wave clearance work was undertaken for Rampion 1, hence there is no evidence that can be provided from this project. There is no proportion of array vs interconnector cable length anticipated to be affected by sand waves which can be provided ahead of detailed design being undertaken.
Document used: [APP-046] 6.2.5 Chapter 5 Approach to the Environmental Impact Assessment					
D11	Chapter 5/ Graphic5.4 and [APP-047]. Chapter 6/ Section 6.8	Graphic 5-4 sets out the general process of evaluating significance, incorporating magnitude of impact and value or sensitivity of receptor. The embedded matrix shows the categories for magnitude of change as: major, moderate, minor, and negligible. However, these do not agree with the definitions provided in Section 6.8 of [APP-047] Chapter 6 (Coastal Processes) which states that the categories for impact magnitudes are: high, medium, low, and very Low.		Natural England requests that the Applicant provides further clarity on this matter and updates Application document s accordingly. Please note also that the Chartered Institute of Ecology and Environmental Management (CIEEM) do not advocate the use of a matrix approach to determining effect significance.	The Applicant agrees that the terms "High; Medium; Low; Very Low" are used to describe categories of assessed magnitude of potential impact in **Chapter 6: Coastal processes, Volume 2 [APP-047]** (defined in **paragraph 6.8.2** and then used consistently throughout **Chapter 6: Coastal processes, Volume 2 [APP-047]**). The same definitions section also refers to the project wide EIA approach for details of the matrix of significance and other EIA methodology details, which instead uses the terms (Major; Moderate; Minor; Negligible) to describe categories of assessed magnitude (**Chapter 5: Approach to the Environmental Impact Assessment, Volume 2 [APP-046]**). There is therefore, an unintended difference in terminology (that was not updated from an earlier stage of work). The Applicant can confirm that equivalent terms are: High = Major; Medium = Moderate; Minor = Low; Negligible = Very Low. The conclusions of magnitude and significance in the assessments remain unchanged.
Document used: [APP-047] 6.2.6 Chapter 6 Coastal Processes					
D12	Chapter 6	We note that Pre-Lay Grapnel Run (PLGR), Unexploded Ordnance (UCO) clearance and boulder clearance have not been considered for impacts on coastal processes. Yet they can lead to pressures such as abrasion/disturbance of the substrate on the surface of the seabed, changes in suspended solids, smothering etc.		We advise that coastal process impacts due to PLGR, UXO clearance, and boulder clearance should be considered and assessed within updated Application documents.	Pre-Lay Grapnel Run ("PLGR") and Unexploded Ordnance ("UXO") clearance are common preparatory activities as part of cable burial. The assessed MDS for cable burial is represented by the relatively more energetic cable trenching and associated sandwave clearance activities. PLGR and UXO clearance in the same locations may produce a broadly similar type of disturbance, but of a clearly smaller magnitude and potential for impact. The potential impacts of these activities are considered by the Applicant to be already contained and assessed within the MDS envelope for cable burial. The impact of MDS PLGR (boulder clearance) and UXO clearance on benthic ecology receptors is assessed in

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
					Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 **[APP-050]**.
D13	Chapter 6	We note that jack-up vessels/anchoring may be used during construction. Have impacts to the seabed been assessed for spud leg/anchoring depressions?		Natural England requests that if not already done so, these impacts are considered and assessed in an updated ES.	The use of jack-up vessels and (to a lesser extent) vessels with anchors is common in offshore wind farm construction. However, any actual indentations in the seabed left by such activities have not previously been identified as a meaningful potential or actual impact to coastal processes receptors. As such, this is not normally scoped into the coastal processes assessment. The impact of MDS jackup leg footprints on benthic ecology receptors is assessed in Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 **[APP-050]**.
D14	Chapter 6 Page 5/ Executive Summary	The Executive Summary states that for the most part 'coastal processes are not in themselves receptors…but are instead 'pathways' of effect. However, we highlight that there are a number of coastal processes receptors within the study area, including the coastline, sandbanks/sandwaves, and designated sites		Natural England requests that the applicant confirms that all coastal process receptors have been identified and therefore assessed.	The Applicant can confirm that the specifically identified coastal processes receptors are identified in Table 6-6 of Chapter 6: Coastal processes, Volume 2 **[APP-047]**, which includes all named receptors identified within the study area for the following categories: nationally or internationally designated sites; local coastlines; regional coastlines; offshore sandbanks; and recreational surfing venues. The Applicant also confirms that the identified receptors are assessed with respect to the relevant potential impacts and pathways of effect.
D15	Page 31/ Table 6-7	We note that the **sandwave field** within the array has not been included in the list of receptors. However, this is an important seabed morphological feature and potential supporting habitat which should be included in the assessment. Similarly, sandbanks **(designated or otherwise)** are important geomorphological features that may provide supporting habitat and should be identified as receptors and scoped into the assessment.		Natural England advises **that sandbanks/sandwaves** are included within the list of **receptors** and the application documents are updated accordingly.	Mobile sediment is present in the array area, with associated bedforms (in some locations) ranging in size from ripples to (relatively small) sandwaves. These features are not part of a nationally or internationally designated site and are a common natural feature of this type of environment. As a result, they have not been assessed as a sensitive receptor in their own right. The pathway of potential effect on sediment transport in the wider study area, and so the processes controlling future bedform development in Chapter 6: Coastal Processes, Volume 2 **[APP-047]**, identified no likely measurable effect on sediment transport (or bedforms) and no significant effect on named sandbank receptors.

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
D16	Page 42/ Table 6-11	Construction: Changes in Suspended Sediment Concentration (SSC) and deposition of disturbed sediments due to dredging, 3rd Column, Maximum Assessment Assumptions, Seabed Preparation Area. Total dredge/disposal volume of 19,500m^3 is quoted for Offshore Substation (OSS) foundation, based on seabed preparation area of 100 x 60m x 1m x 3 OSS, but we query whether this should be 18,000m^3.		Natural England requests that the Applicant checks these figures and ensures that correct volumes are included in any assessment and the DCO/DML.	The quoted value is based on the principles for dredging footprint (footprint +15 m all around) and dredge dimensions of 100 m x 65 m (based on an earlier maximum leg separation of 35 m and up to 6 legs). The difference in the quoted width of the dredge area does not affect the basis or the conclusions of the assessments already made and remains representative of realistic dimensions within the maximum possible ranges. Maximum disposal volumes are specified in part 1 of each of the dML (Schedules 11 and 12 of the **draft DCO [PEPD-009]).**
D17	Page 52/ Table 6-12	Commitment C-283 – it does not state where the proposed gravel bags may be placed, or which areas of seabed may be affected.		Natural England requests that the Applicant provides a map of gravel bag locations in order for us to agree with conclusions drawn on the significance of their use. Ideally, this would be included within an Outline Cable Specification and Installation Plan submitted to support the consenting phase.	The requirement for the use of gravel bags will be determined during detailed design, once the contractor completing the works has been appointed following consent. If it is deemed that gravel bags are needed, the location of where these need to be placed will also be determined during the detailed design, this will be detailed in the Cable Specification and Installation Plan secured by Condition 11(1)(n) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**). In response to Issue Specific Hearing 1 agenda item 46, the Applicant has produced an assessment of temporary gravel beds: **Appendix 13 - Further Information for Action Point 45 and 46 – Physical Processes and Benthic (Document reference 8.25.13).**
D18	Page 52/6.8	Methodology for ES Assessment – impact magnitude definitions and coastal process receptor sensitivity definitions have been provided, but no definitions are provided for the resulting significance of effects.		Natural England requests that the Applicant includes the matrix, or other **method used for determining significance of effect** with an updated Application document. Without this, we are unable to agree with any conclusions drawn.	Please refer to the Applicant's response to Comments D5 and D11 above. **Chapter 6: Coastal processes, Volume 2 [APP-047]** provides definitions for categories of impact magnitude and receptor sensitivity. The project wide approach detailed in **Chapter 5: Approach to the Environmental Impact Assessment, Volume 2 [APP-046]** is referred to for the corresponding matrix of significance. The significance of effect is the result of the combination of the assessed magnitude and sensitivity inputs, and is not normally separately defined (for this topic).

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
D19	Page 55/6.8.19	We note that for the assessment of potential changes to the wave and hydrodynamic regimes, no coastal processes receptors have been identified. However, a reduction in significant wave heights on the downwind boundary could affect sensitive receptors that overlap with the wave shadow area (e.g. Kingmere MCZ).		We advise that there are coastal process receptors which may be affected by changes to the wave and hydrodynamic regimes. These should be identified and assessed accordingly within updated Application documents.	The extent and magnitude of maximum proportional reduction in significant wave height is illustrated in **Figure 6.4, Chapter 6:, Coastal processes – Figures, Volume 3 [APP-079]** and the location of all designated sites, including the extent of Kingmere Marine Coastal Zone (MCZ) is illustrated in **Figure 6.2, Chapter 6:, Coastal processes – Figures, Volume 3 [APP-079]**. The figures indicate that a minimal reduction (2.5 to 5 % reduction) in smaller (50 % non-exceedance) waves might overlap with Kingmere MCZ, or areas updrift of it. Figures A6 to A20 in **Appendix 6.3, Coastal processes technical report Impact assessment, Volume 4 [APP-131]** illustrate that for other larger wave conditions from a range of coming directions, the reduction is less than 2.5 %. As assessed in **Chapter 6: Coastal processes, Volume 2 [APP-047]**, in all cases, the reduction in wave height is small in relative and absolute terms, and in comparison to the normal range of natural variability. As a result, no measurable change to the environmental processes (waves or sediment transport) in the Kingmere MCZ was identified.
D20	Page 59.6.9.7	The minimum turbine spacing for the smaller and larger WTG options is 950m to 1130m, respectively. However, in the footnote, a minimum spacing of 830m for even smaller WTGs which could be employed, is provided. It also states that only relatively fine sediment is likely to be advected far enough to potentially cause overlapping effects of SSC.		Natural England requests that the Applicant clarifies the separation distances for the proposed turbines and that plume dispersal range and settlement thickness are appropriately assessed within the application documents. If not, these would require updating.	Minimum turbine spacing at 950m and 1130m represents the minimum spacing for the smaller and larger turbines scenarios respectively, however for the purposes of the EIA, and specified within the draft DCO **[PEPD-009]**, a minimum of 830m has been used to provide for the possibility of smaller WTGs being employed (note that such a scenario would not exceed any other relevant assessment parameters, including the maximum of 90 WTGs. If activities causing sediment disturbance are undertaken simultaneously at two or more locations that are aligned in relation to the ambient tidal streams, then there is potential for overlap between the areas of effect on SSC and sediment deposition. The potential for in-combination effects on SSC and sediment deposition is considered to be low, due to the low likelihood of sufficiently close alignment (along the tidal axis) between WTG foundations that are being simultaneously installed. The assessment of overlapping and cumulative impacts for sediment plumes is provided in, **Appendix 6.3: Coastal processes technical report: Impact assessment, Volume 4 [APP-131]**. The relative distance between the foundations is not a key factor in this statement as the majority of coarser sediment (sand and gravel) is expected to be redeposited out of the plume

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
					over distances less than the minimum separation distance between foundations, and the remaining finer material will persist in suspension for distances longer than the maximum separation distance between foundations.
D21	6.9.33	We note that **significance of residual effect has not been assessed for increases in SSC and deposition of disturbed sediments due to cable installation**, on the basis that there are no coastal process receptors sensitive to the impact pathway. However, this impact has the potential to affect **designated MCZ features which are identified as coastal processes receptors** requiring assessment (see Table 6-6),		We advise that significance of effect should be defined within the application documents. And where impacts on MCZ features are assessed in other documents, this should be signposted.	Whilst seabed disturbance and associated changes in suspended sediment concentrations ("SSC") and deposition of sediment will occur, the Kingmere MCZ is not identified as a receptor (or containing receptors) that is/are directly or indirectly sensitive to the occurrence of such changes (similar to fluctuating everyday natural processes). As such, the nature and magnitude of the effect is described as a pathway (in **paragraph 6.9.21** onwards, **Chapter 6: Coastal processes, Volume 2 [APP-047]**). Impacts and impact assessment on other MCZ features (e.g. benthic ecology features) are signposted in the same assessment, **paragraph 6.9.32**, **Chapter 6: Coastal processes, Volume 2 [APP-047]**.
D22	6.9.71-6.9.72 & [APP-216] Appendix 26.2	We advise that **cable protection measures installed at landfall** represent a lasting rather than short-term/temporary change even if removed at the time of decommissioning. Consequently, we advise that the **magnitude of change** would be **greater than low.**		We advise that the **magnitude of change** is **greater than low** for Climping Beach SSSI and the wider coastal morphology at the landfall. We advise that cable protection should be avoided within the depth of closure. An additional assessment should be carried out (e.g., wave modelling) based on the WCS for cable protection requirements	The magnitude of change categories are described in **paragraph 6.8.2**, **Chapter 6: Coastal processes, Volume 2 [APP-047]**. The magnitude of change potentially caused by nearshore cable protection (paragraphs 6.9.71-6.9.72 of the same document) is assessed as Low due to both the temporary (during the lifetime of the project) and localised nature of any potential effect from the realistically anticipated design of cable protection nearer to the landfall (i.e. sufficient low profile to avoid any measurable effects other than changes to seabed type in the footprint of the protection itself, and the possibility of a small amount of very near-field scour). The protection is not expected to present any measurable blockage to currents or local sediment transport, or changes to the wave climate coming onto the adjacent beach, and therefore, no far field changes to Climping Beach SSSI or the wider coastal morphology at the landfall. An assessment of Medium magnitude of change would imply permanent changes to key characteristics or features of the seabed or coastline in far-field areas, which are not realistically expected. Further ground investigation will be carried out at the landfall at the post-DCO Application stage as outlined in commitment C-247 (**Commitments Register [APP-254]**) and secured within the **Draft DCO [PEPD-009]** Requirement

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
					26. The ground investigation will inform a 'coastal erosion and future beach profile estimation assessment' which would inform the final cable burial and protection designs. Wave modelling at the scale of the cable protection units (tens of centimetres to a few metres overall dimensions) is not normally undertaken as part of the design process. However, the cable protection design process is informed by a large evidence base of empirical formulae and relationships based on a wide range of historical data including laboratory testing, computer simulations and real-world observations.
D23	Page 73/6/9/73	In 6.4.26.2, it states that the section of sea defence at the proposed landfall *"is considered to be 'very vulnerable,' not just to overtopping, but also erosion and natural coastal realignment."* Natural England highlights that Climping Beach SSSI is a stretch of coast with a vegetated shingle beach, backed by a sand dune system, with the intertidal zone supporting important wintering birds. Vegetated shingle beaches are nationally uncommon and sand dune systems are fragile and susceptible to erosion. Thus, given that cable protection requirements are not presently known, we would advise that the **sensitivity** of the Climping Beach SSSI as well as the wider coastal morphology at landfall, is **greater than medium**.		We advise that the **sensitivity** of the Climping Beach SSSI and the wider coastal morphology at landfall, is **greater than medium**. We note that the sea defences at Climping have failed in the recent storms, causing further coastal erosion and flooding. It is imperative that landfall HDD burial depths and cable protection options are adequately interrogated to future proof the asset integrity and prevent unnecessary coastal rock armouring. Especially as the shoreline management plan is to let the coast roll back, see: https://se-coastalgroup.org.uk/media/2019/02/Selsey- Bill-to-Littlehampton-RBMP.pdf	Please refer to the Applicant's response to comment D6 above. The Applicant considers that the assessed sensitivity of the Climping Beach SSSI and the wider coastal morphology at landfall is medium, as per the definitions established in **paragraph 6.8.3** of **Chapter 6: Coastal Processes, Volume 2 [APP-047]** and also based on the capacity to accommodate the proposed form of change (which is localised and of very small potential magnitude). The HDD profiles will be designed by the appointed landfall HDD contractor post consent once sufficient site investigation information has been obtained (to be approved as part of the onshore construction method statement pursuant to Requirement 23, Schedule 1 and following the completion of the coastal erosion and future beach profile estimation assessment secured by Requirement 26 Schedule 1 of the **Draft DCO [PEPD-009])**. Though subject to what is determined to be the soil and rock profile at the landfall, the drill will typically be at least 6 m below ground/beach/seabed level with the exception of the short transition distance at the start and exit points of the drilling works. With this significant level of overburden above the HDD ducts, there is no expected need for any rock armouring in this vicinity either during construction or during operation.
D24	Page 73/6/9/74	Following on from our comments above, we advise that the significance of **residual effect** on morphology at landfall, including Climping SSSI, is **greater than minor adverse and cable installation is an operation likely**		We advise that the **residual effect** on morphology at landfall, including Climping SSSI, is **greater than minor adverse**. Therefore, we advise that impact assessments are updated, and the mitigation hierarchy is adopted.	Please refer to the Applicant's response to comment D6 above.

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
		to damage the notified features of the SSSI.			
D25	Section 6.10	Changes to the **nearshore wave regime/longshore sediment transport due to the presence of cable protection measures** have not been considered for the **operational phase.**		Natural England advises that the Applicant needs to assess changes to the **nearshore wave regime/longshore sediment transport** due to the presence of **cable protection measures during the operational phase**. Ideally this would be included in an Outline Cable Specification and Installation Plan.	Changes to the nearshore wave regime/ longshore sediment transport due to the presence of cable protection measures are assessed in paragraph 6.9.71 onwards of **Chapter 6: Coastal processes, Volume 2 [APP-047]**. The assessment (listed here under construction phase potential impacts) finds that "*if cable protection is installed at the landfall it will be installed with a sufficiently low profile relative to the surrounding bed to present minimal barrier to the passage of waves and so cause no change to long term patterns of sediment transport*". The same assessment implicitly extends throughout the operational and decommissioning phases. A Cable Specification and Installation Plan is secured by Condition 11(1)(n) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**).
D26	Page 75.6.10.7-6.10.8	**Outer Owers Bank that overlaps, and sandwaves within the array,** are coastal process receptors that may be affected by changes to the tidal regime. However, this has not been considered or assessed.		Natural England advises that sandbanks**/sandwaves** that overlap/within the array areas are included within the list of **receptors** and assessed within updated application documents.	Changes to the tidal regime due to presence of windfarm infrastructure are assessed in paragraph 6.10.1 onwards, of **Chapter 6: Coastal processes, Volume 2 [APP-047]**. Outer Owers Bank is one of the named receptors in this chapter, however, the active or raised part of the bank does not overlap the array area. The MDS potential changes to currents are found not to overlap any of the identified coastal processes receptors.
D27	Page 75/6.10.7/2nd bullet point	It is stated that there is the potential for **overlapping wake effects** between Rampion 2 foundations and a small number of foundations in the adjacent Rampion 1 array. What is the extent and magnitude of these overlapping wake effects?		Natural England advises that this should be considered and assessed, and any evidence from Rampion 1 included in updated application documents.	As described in paragraph 6.10.1 onwards of **Chapter 6: Coastal processes, Volume 2 [APP-047]**, tidal current wake effects are a narrow corridor of slightly reduced speed and proportionally elevated turbulence, that rapidly recovers towards ambient conditions with distance downstream from each foundation. Each wake extends downstream in the order of only metres wide when measurable. For two wakes to overlap, the effect would need to: 1) remain measurable over the distance between foundations (many hundreds of metres); and 2) happen to coincide spatially. Should this effect arise, both conditions are highly unlikely to result in any meaningful additive effect other than that already described for all the individual foundations (for the Proposed Development and Rampion 1).

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
D28	Page 78/6.10.18	Impacts to **designated sites** should also be included as receptors that could be affected by **changes in the wave regime** through the presence of the proposed development alone and in combination with Rampion 1.		Natural England advises that **designated sites** as receptors that could be affected by changes to the wave regime (due to the presence of the proposed development alone and cumulatively), are included by the Applicant in updated impact assessments.	Please refer to the Applicant's response to comment D19 above. The assessment results shown include MDS for the Proposed Development alone and for the Proposed Development in combination with Rampion 1.
D29	Page 79/6.10.21	The use of **cable protection measures within shallow, sandbank/sandwave, nearshore and intertidal areas** have the potential to alter the **sediment transport regime**. However, this has not been included here.		We advise that potential changes to the sediment **transport regime** due to the presence of **cable protection within shallow, sandbank/sandwave, nearshore and intertidal areas** need to be considered and assessed within updated application documents	Please refer to the Applicant's response to comment D25 above with regard to cable protection measures nearshore (i.e. in shallow, nearshore and intertidal areas). The potential impact of cable protection measures is otherwise described in **Section 5** of **Appendix 6.3: Coastal processes technical report Impact assessment, Volume 4 [APP-131]**.
D30	Page 81/6.10.34	With respect to changes at the coast, it is stated that *"there will be no measurable reduction in wave height at adjacent coastlines…Accordingly, these changes are not predicted to have any measurable influence on alongshore and cross-shore sediment transport."* Is there any evidence from Rampion 1 regarding changes to the wave climate due its presence?		Natural England advises that the Applicant includes/considers any relevant evidence from Rampion 1 regarding changes to the wave climate due to the presence of the wind farm within updated application documents.	Please see the Applicant's response to Comment D2 above.
D31	Page 82/6.10.35	We note that the **sensitivity of the sandwaves** within the array has not been considered/assessed. In addition, the sensitivity and significance of effect have been evaluated for nationally and internationally designated sites, but not their magnitude of impact.		Natural England advises that the Applicant assesses **sensitivity of the sandwaves** within the array. The magnitude of impact to designated sites also needs to be evaluated. Both of which should be included in updated Application documents.	Concerns were discussed as part of the ETG meeting 3 November 2021 attended by Natural England (see **Evidence Plan** part 1 of 11 **[APP-243])**. It was agreed that limited or no measurable change is assessed as likely to occur to the wave climate or tidal regimes affecting these areas, and therefore, there would logically be no change to regional sediment transport patterns or patterns of sandwave mobility. Direct impacts on sandwaves (e.g. localised levelling) will only temporarily redistribute sediment volume locally and therefore features are likely to recover.
D32	83/6.10.41	We advise, as with Rampion 1, that **scouring around cable protection and cable crossings** may occur in **shallow water/nearshore**.		We advise that this needs to be considered and assessed by the Applicant and included in updated application documents. Noting that any remediation sound also be assessed.	Please refer to the Applicant's response to comment D25 above, with regard to cable protection measures nearshore (i.e. in shallow, nearshore and intertidal areas).

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
D33	Page 84/6.10.42	It is stated that there are no coastal processes receptors sensitive to the effects of scour. However, there are sandbanks**/sandwaves** overlapping/within the array areas. Therefore, the **potential impact of scour** to these seabed geomorphological features should be considered.		We advise that the potential impact of **scour** needs to be considered and assessed within update application documents for **sandbanks/sandwaves** overlapping/within the array areas.	The potential dimensions of scour are described in **Section 6** of **Appendix 6.3: Coastal processes technical report Impact assessment, Volume 4** **[APP-131]**. Seabed scour is a very localised process that deforms the seabed only immediately around the installed infrastructure. Scour has no effect on wider scale sediment transport rates or patterns and does not represent any net change in the volume of sediment available in the local or regional system. Therefore, any related potential impact is assessed to be not significant.
D34	Page 86/6.11.14	The coastal stretch at landfall, including Climping Beach SSSI, is very vulnerable and the future of beach management works uncertain. Therefore, we advise that its sensitivity is likely to be **greater than medium**.		We advise that the **sensitivity** of the coastal **stretch at landfall, including Climping SSSI**, is **greater than medium.**	Please refer to the Applicant's response to comment D23 above.
Document Used: [APP-129] 6.4.6.1 Appendix 6.1 Coastal Processes Technical Report Baseline Description					
D35	Appendix 6.1 Page 54/5.4	The Cefas suspended particulate matter (SPM) concentration are now quite old (1998-2015) and Rampion 1 is now part of the baseline. Are more up-to-date SPM data available?		Natural England recommends that if available, the Applicant includes more up-to-date SPM data.	The Applicant is not aware of any more recently collected or processed data. The previous data period 1998-2015 represents an approximate 17-year duration, which should provide a reasonable indication of normal seasonal and interannual variability. Any newer data would represent only up to an additional 50 % of the previous data duration.
D36	Appendix 6.1/ Figure 6.1.19	We note that there are a number of paleo-channels across the study area (export cable corridor and array areas) where the infill substrate maybe mobile or poorly consolidated. Are there any post-construction evidence/lessons from Rampion 1 regarding paleo**-channel scour**?		We advise that scour monitoring may be necessary at these sites due to the unpredictable nature of the channel infill substrate and localised hydrodynamics. Include any evidence/lessons learned from Rampion 1. We advise that a Cable Burial Risk Assessment (including relevant geotechnical information) should be provided at the consenting stage to understand the potential for successful burial in paleo channels.	Please see the Applicant's response to Comment D2 above regarding evidence from Rampion 1. The Applicant has based its assessment of cable burial potential on current data, which is considered appropriate at this pre-consent stage; a full Cable Burial Risk Assessment based on the results of the pre-construction surveys (in accordance with Schedule 11 and 12, Condition 11 and 16 of the **draft DCO** **[PEPD-009]**) will be undertaken when the final cable design parameters are determined post-consent. The Applicant has replied to the Examining Authority explaining why geotechnical information cannot be provided at the consenting stage in Item 47 of **Applicant's post hearing submission - Issue specific hearing 1** **(Document reference 8.25)**

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D37	Appendix 6.2/2.2.7	We note that the model bathymetry was sourced from European Marine Observation and Data Network (EMODnet). Given that the bathymetry underpins the modelling, can the rationale be provided for not using up-to-date project-specific data?		Natural England requests that the Applicant provides rationale for using EMODnet rather than up-to-date project-specific bathymetry data.	EMODnet bathymetry (collated from other publicly available sources, including surveyed bathymetry in some locations) provides a consistent, convenient and complete coverage bathymetry data set for the whole wider study area, within which to frame the various assessments. The resolution of these data is also suitable to inform the numerical modelling (resolution tens to hundreds of metres). In addition to this, Condition 16 (2) (a), dML Schedules 11 and 12 , of the **draft DCO** **[PEPD-009]** requires a pre-construction survey of a full sea floor coverage swath–bathymetry survey undertaken to IHO Order 1a standard that meets the requirements of MGN654 and its annexes, and side scan sonar of those parts of the offshore Order limits in which it is proposed to carry out the authorised scheme and an appropriate buffer.
Document Used: [APP-130] 6.4.6.2 Appendix 6.2 Coastal Processes Model Design and Validation					
D38	Appendix 6.2/2.3.2	The Rampion 1 wave data used to locally validate the SEASTATES wave hindcast model were collected during November-December 2010. Similarly, the wave buoy data used to validate the model regionally are also old (2013), and pre-date the now built Rampion 1 array.		Natural England advises that the Applicant must provide evidence-based justification as to how representative these data are of the present-day prevailing wave conditions across the study area	It is common practice to utilise a limited duration of previously collected wave measurements to locally validate a longer term hindcast wave timeseries (extending over a longer period and closer to present). The longer-term data set is then used as the basis for any statistical description of wave climate. The quality of the validation is limited only by the quality of the measurement device, not the age of the data. The wave impact modelling undertaken was based on scenarios of wave height (height, period and direction) based on the statistics of the wave climate over 30-40 years, but otherwise independent of time (and of the limited duration of available wave measurements).
D39	Appendix 6.2/2.3.3	The SEASTATES wave hindcast model is shown to provide a close representation of wave conditions measured at wave buoys within and near the eastern Rampion 2 array. However, we note that none of the Rampion 1 wave buoys were located within the western array. How do the model data fit wave conditions at the western array?		Natural England advises that best available evidence should be presented in updated application documents in order to support the current assessments.	Please also refer to the Applicant's response to comment D38 above. The use of a wave model (validated against measured data at nearby locations) provides modelled data at locations throughout the study area. Whilst uncertainty in the validation might increase with distance from the locations where validation has been possible, the size of the model /study area in this case is relatively small, and the validation is considered by the Applicant to be suitably robust over the whole study area.

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
D40	Appendix 6.2/2.3.8	Were measurements of inshore wave conditions used to validate the model?		Please can the Applicant clarify if present- day inshore wave conditions informed the models used within the ES? If not, please can rationale be provided?	Please refer to the Applicant's response to comment **D39** above.
Document Used: [APP-131] 6.4.6.3 Appendix 6.3 Coastal Processes Technical Report Impact Assessment					
D41	Appendix 6.3/ Page15/ 2.3.4	The 2nd bullet point states that a representative current speed for the Rampion 2 offshore array area is 0.5m/s, which is representative of mid to higher tidal flow conditions, occurring on most flood and ebb cycles for a range of spring and neap conditions. However, we note that there is a marked variation in current speed across the array areas, from west to east, and north to south. Would it be more appropriate to use more than one current speed in the sediment plume modelling to represent these different conditions?		We advise the Applicant to use more refined model parameters to ensure that a realistic worst-case scenario has been assessed.	For a given total volume and rate of sediment disturbance, there is a proportional relationship between the ambient current speed and the resulting plume concentration, extent and thickness of deposition at certain distances. Marginal cases are the shortest distance (zero current speed) and the longest distance (one tidal excursion distance on a large spring tide, for a release over a complete ebb or flood tide with continuously varying current speed in that time). Lower speeds and so shorter distances will result in less dispersion and so potentially higher SSC and greater thicknesses of deposition, but only in a very small footprint. Higher speeds will increase the footprint of effect, but the disturbed material will be proportionally more dispersed leading to much lower SSC and deposition thicknesses. The representative case provided by a 0.5 m/s current speed is experienced frequently by all locations in the Array Area and Export Cable Corridor. Other current speeds are possible, but there are a very large range of possible local values. The assessment provides the basis for a proportional understanding of differences in this respect.
D42	Appendix 6.3/ Section 2.4	We note that there are no maps showing foundation/pin pile drilling plume maximum sediment plume concentration, spatial extent, and orientation, as well as associated deposition footprint. These are important for understanding potential impacts on sensitive receptors (*e.g.,* benthic habitats, WFD water body status).		We advise that **maps should be provided by the Applicant to show anticipated maximum sediment plume concentration, spatial extent, and orientation**, as well as associated **deposition footprint**	A map showing the extent of SSC and sediment deposition effects from sediment plumes is provided in **Figure 2-3** together with the text in **Section 2.9** of **Appendix 6.3 Coastal processes model design and validation, Volume 4 [APP-131].**
D43	Appendix 6.3/ Page 18/ 2.4.4-2.4.6	It is stated that there is limited field evidence of WTG installation into chalk using drill-drive methods, and the evidence provided is taken from Lynn and Inner Dowsing OWFs and environmental conditions may not be similar. Is there any		Natural England advises that further assessment of drill arisings is required.	All Rampion 1 foundations were installed by impact piling with no need for any drilling activities. Therefore, there is no evidence from Rampion 1 regarding the nature and evolution of drill arisings. Please see the Applicant's response to Comment D2 above.

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
		evidence or lessons learned from Rampion 1 that can be drawn upon regarding the nature and evolution of drill arisings?			
D44	Appendix 6.3/ Page 31/ Table 2-7	The maximum Wind Turbine Generator (WTG) jacket dimensions at the seabed are 45 x 45m. Dredging to 70 x 70m. It is not clear why the dredged area will be 70 x 70m.		Natural England requests that the Applicant provide further justification for the large dredge areas compared to foundation diameter.	The quoted values are from the MDS for a single WTG foundation in **Table 2.7** of **Appendix 6.3: Coastal processes technical report Impact assessment, Volume 4 [APP-131]**. The dimensions of the outer edge of a multi-leg jacket with suction caissons is 45 x 45 m. The 70 x 70 m footprint was a previously used value and may require updating (the earlier value accounts for 87% of the updated volume and the difference would not affect the conclusions of the assessment). The maximum footprint (up to 15 m beyond the outer edge of the foundation) is up to 75 x 75 m. However, the MDS total volume for all WTG foundations is associated instead with the larger number of small foundations (30 x 30m footprint with dredging to 15m beyond the footprint of the jacket, i.e. 60 x 60m), as outlined in **Table 6-11** of **Chapter 6: Coastal processes, Volume 2 [APP-047]**.
D45	Appendix 6.3/ Section 2.5	As above. We note that there are no maps or schematics to show foundation and cable installation dredging plume model results.		We advise that maps should be provided by the Applicant to show **anticipated maximum sediment plume concentration, spatial extent, and orientation**, as well as associated **deposition footprint**.	Please refer to the Applicant's response to comment **D42** above.
D46	Appendix 6.3/ 2.5.5	We note that 1,375,000m^3 could be dredged as part of the sandwave levelling/clearance in the Rampion 2 array area.		Natural England advises the Applicant to provide further details including information on how sandwave recovery will be established following this activity, and how dredging could influence patterns of sediment transport and/or lead to morphological change should be included in updated Application documents.	Sandwaves are only present in part of the eastern offshore array area, as described in **paragraph 4.2.8** and **Figure 6.1.13** of **Appendix 6.1: Coastal processes technical report Baseline description, Volume 4 [APP-129]**. The sandwaves are up to 2 m in height and are migrating actively towards the east at an annual average rate of ~2 m/yr. Sandwave levelling approaches typically keep the displaced sediment in the local sedimentary system, so there is no change in total volumes of sediment available for transport. The local levelling is a local deformation of individual sandwave crests, but the seabed type will remain similar (i.e. sandy, surrounded by sandwaves) during the subsequent recovery period. The available evidence suggests that any change to the local flow field in the levelled area is unlikely to have any measurable effect on

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					the future form and function of other sandwaves. As the sandwaves are demonstrably mobile, it is certain that locally levelled areas will recover through a combination of local infill and onward migration of the feature. The timescale for full recovery is difficult to estimate, but partial recovery to a natural seabed surface (similar seabed type to troughs in the surrounding area) is expected in the order of months to one year.
D47	Appendix 6.3/2.5.2	If the Trailing Suction Hopper Dredger (TSHD) operates in shallow water with small under keel clearance, there is the potential for the overspill plume to combine with a propeller wash plume due to scouring of the seabed. This propeller wash plume will release fines that are additional to those in the overspill plume and should be considered and assessed.		Natural England advises the Applicant to consider and assess the relative contribution of fines to the passive/far-field plume due to **propeller-induced bed erosion during dredging,** where relevant. And update the Application where appropriate.	Such specific scenarios of dredging operations (vessel type, dimensions, propulsion configuration, water depth, ambient conditions, seabed composition, dredging protocols followed, etc) are difficult to reasonably define with any certainty, without becoming over-conservative. The actual effect will be mitigated and controlled to some extent by the design of the vessel dredging plan and protocols used (secured through Condition 11(c), Schedules 11 and 12 of the dMLS, of the **draft DCO [PEPD-009]**), following industry best practice. As such, any effect should be no worse than standard marine dredging operations in a similar situation.
D48	Appendix 6.3/ Section 2.6	We note that there are no maps or schematics to show cable burial plume model results.		We advise that **maps** should be provided to show anticipated maximum sediment plume **concentration, spatial extent, and orientation,** as well as associated **deposition footprint.**	A map showing the extent of SSC and sediment deposition effects from sediment plumes is provided in **Figure 6.3.4** together with the text in **Section 2.9** of **Appendix 6.3: Coastal processes technical report Impact assessment, Volume 4 [APP-131]**.
D49	Appendix 6.3/ 2.6.3-2.6.9	We note that the recent Rampion 1 seabed analysis report (2023) identified exposure risk of short lengths of the export cables and array cables. The 2021 Rampion 1 seabed analysis report observed that all four export cables were experiencing an erosive trend, particularly towards onshore and near the offshore substation. Yet, the Rampion 1 Environmental Statement (ES) predicted that cable exposure would be unlikely due to their burial depth and the ability of the mobile sediments at the seabed to keep the cables buried.		We advise that lessons learned, and post- construction survey results should be used to inform the Rampion 2 cable burial depth assessment. Incorporate evidence from Rampion 1 into the assessment of cable burial depths for Rampion 2.	Please see the Applicant's response to Comment D2 above.

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
D50	Appendix 6.3/3.4	The assessment of **changes to the wave regime** due to Rampion 2 and the built Rampion 1 array has not considered impacts to the sandwave field in the eastern Rampion 2 array and Rampion 1 array.		We advise that changes to the wave regime at the **sandwave field** should be considered and assessed by the Applicant in updated application documents.	Please also refer to the Applicant's response to comment D19 above for details of the wave impact modelling undertaken. Noting that the sandwaves are located in the eastern array area. Similarly, **Figures A6 to A20** in **Appendix 6.3: Coastal processes technical report Impact assessment, Volume 4 [APP-131]** illustrate that for scenarios where all WTGs are installed in the western array area, there is no expected change in the waves overlapping the location of the sandwaves (for the scenarios tested); and, for scenarios where WTGs are installed in the eastern and western array areas, there is only a small expected change (2.5 % to 5 %, i.e. not measurable) in the height of waves overlapping the location of the sandwaves (for the scenarios tested). This also informs the conclusion of no expected measurable change to resulting sediment transport patterns as a result of changes to the wave (or tidal) regimes, and therefore, no expected change in the natural form and function, or future evolution, of the sandwaves present in the array area.
D51	Appendix 6.3/ Section 4.2	We note that the **baseline tidal conditions** have not been presented.		Natural England advises that **baseline tidal conditions** (current and speed) for neap and spring tides should be presented in updated documents (i.e., maps) for the study area.	A map of baseline tidal currents is presented as **Figure 6.1.4** in **Appendix 6.1: Coastal processes technical report Baseline description, Volume 4 [APP-129].**
D52	Appendix 6.3/ Section 4.4	The assessment of **change to tidal conditions due to the proposed scheme layouts** has not been included.		Natural England advises that an Assessment of **change to tidal conditions due to the proposed scheme layouts** should be provided (i.e. maps) to support Application documents.	A detailed assessment of change to tidal conditions due to the proposed scheme layouts is provided in **Section 4** of **Appendix 6.3: Coastal processes technical report Impact assessment, Volume 4 [APP-131].** This information is summarised in paragraph 6.10.1 onwards of **Chapter 6: Coastal Processes, Volume 2 [APP-047]**. The assessment (based on a review of modelling studies for other wind farms, including Rampion 1) concludes that analogous offshore wind farms consistently have no measurable array scale effect (<a few cm/s or <1 degree) on tidal current speed or direction. Narrow wake features (with relatively lower mean current speed and proportionally increased turbulence intensity) are likely to be present behind individual foundations, but the distance for recovery to near ambient conditions is in the order of tens to a few hundreds of metres and the wakes are unlikely to overlap. The Applicant considers that the assessment and conclusion is robust and clear in the form of the statements made. As the determined effect is negligible in magnitude and no new

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
					modelling has been undertaken to define a specific pattern to plot, no new map of potential impact has been created.
D53	Appendix 6.3/ Section 4.5	**Cumulative changes to tidal conditions** due to the presence of the proposed Rampion 2 scheme layout(s) and the built Rampion 1 have not been presented.		Natural England advises that **cumulative changes to tidal conditions** due to the presence of the proposed Rampion 2 scheme layout(s) and built Rampion 1 array need to be presented by the Applicant to support their application.	Please refer to the Applicant's response to comment D52 above.
D54	Appendix 6.3/5.4.7	It is stated that during large storm events, '*waves may stir the seabed within shallower parts of the offshore array areas, naturally causing an additional short-term contribution to SSC levels locally*.' It would be useful if these areas could be shown on a map.		Natural England requests that maps to show where **shallow areas of seabed have the potential to be stirred up during large storm events** are provided by the Applicant.	Although the statement is correct and meaningful in a general sense, the exact area that would be affected would vary depending on the nature of the storm (size and length of waves) and the tidal water level (affecting local water depth). For a given scenario, there would also be a gradient of effect moving from very shallow, through intermediate, to deep water. A map of absolute effect therefore cannot be created without significant uncertainty. As a guide, everyday waves (4 to 5 s wave period) will start to interact with the seabed (although not necessarily causing sediment resuspension) in 12-20 m water depth. Larger storm waves (8 to 10 s wave period) will start to interact with the seabed (although not necessarily causing sediment resuspension) in 50-75 m water depth.
D55	Appendix 6.3/ 5.4.3-5.4.5 and 5.5	We note that the assessment of predicted **sediment transport regime changes** has not been presented either for the proposed Rampion **2 scheme layout(s) alone or in combination with the built Rampion 1 OWF**.		Natural England advises that predicted sediment **transport regime changes due to Rampion 2 alone and in combination with Rampion 1**, should be presented.	The assessment of potential changes to the sediment transport regime is a logical conclusion based on the assessed very low magnitude of change to tidal currents and waves (for the Proposed Development alone, and for the Proposed Development in combination with Rampion 1). The detailed assessments are provided in **Appendix 6.3: Coastal processes technical report Impact assessment, Volume 4 [APP-131]**. The summary assessment and conclusions of significance are provided in **Chapter 6: Coastal processes, Volume 2 [APP-047]**. The Applicant considers that the assessment and conclusion is robust and clear in the form of the statements made. As the determined effect is negligible in magnitude and no new modelling has been undertaken to define a specific pattern to plot, no new map of potential impact has been created.
D56	Appendix 6.3/Section 6.3 & 6.4.13	The evidence base for **scour** does not refer to Rampion 1 post-construction surveys. It is also stated that the erosion resistant (pre-Holocene) material is present		Natural England advises that best available evidence **and/or lessons learned from Rampion 1** are submitted into examination within updated Application documents to support predictions of **scour** and scour protection requirement.	Please see the Applicant's response to Comment D2 above.

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		at, or close, to the seabed in most parts of the western and northeast parts of the offshore array areas, which is likely to lead to a natural limitation of scour depth. Is there any supporting post-construction evidence from Rampion 1 that can be drawn on for the scour assessment?			
D57	Document 7.1.2/3.2.3	We note that cable protection forms such as geotextile bags and polyethylene half shells are included as potential options.		Natural England advises that where cable protection cannot be avoided, our preference is for the use of cable protection materials that match the receiving environment whilst also avoiding introducing plastics to the marine environment. Recoverability on decommissioning should also be considered.	The Applicant is in agreement with Natural England to minimise the use of plastics and geotextiles. The Applicant commits to using suitable alternatives, where this is practicable. The Applicant has committed to minimising the release of plastics into the marine environment this has been added to the commitments register as C-288 and will be secured through the **Outline Scour Protection and Cable Protection Plan** **[APP-234]** to be updated at Deadline 3**.**
D58	Document 7.1.2/ Table 3-1	We note that the Maximum Design Scenario (MDS) inter-array cable target burial depth is 1m, the proportion of array cable requiring protection is 20% and replenishment of cable protection during operations is 25% (of construction total). Has post-construction evidence or lessons learned from Rampion 1 been used to inform and validate these assumptions?		Natural England advises that further information is required before we are able to provide further advice on the potential impacts. See also our related comments on Benthic Ecology.	The MDS envelope for cable burial and estimates of future cable protection requirements for the Proposed Development, are informed by the Applicant's experience of the construction and maintenance of offshore wind farms.. Relevant embedded mitigation and conservatism has already been included in the engineering design options and envelope. No detailed/specific data about cable burial or protection at Rampion 1 (the design and location of which does not provide a direct analogue for the Proposed Development) is required to inform the assessments in this ES. Regarding Rampion 1 post-construction monitoring data please see the Applicant's response to Comment D2 above.
D59	Document 7.1.2/3.4.3	It is stated that in shallow water sections of the cable route, where ground conditions are not suitable to 'ground out' the export cable installation vessel on the seabed, the construction of **temporary sand/gravel beds** may be required. There are no details of these temporary sand/gravel beds or impact assessment.		We request the Applicant provides further details of the **temporary sand/gravel beds** and assess their impact on the seabed /substratum. We request the Applicant provides further details of the temporary sand/gravel beds and assess their impact on the seabed/substratum.	The beach and shallow intertidal and subtidal areas at the landfall comprise a mixture of sands and gravels. The temporary addition and subsequent removal of sand/gravel beds in the nearshore area is unlikely to change the composition or form or function of the sediments present following the construction phase, especially following a reasonable period of reworking (e.g. one large storm). Further details of the temporary gravel beds has been provided in **Appendix 13 – Further Information for Action**

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
					Point 45 and 46 - Physical Processes and Benthic (Document reference 8.25.13) submitted at Deadline 1.
D60	Document 7.1.2/ Table 3-3	We note that the target burial depth for export cables is 1-1.5m, and the proportion of export cable requiring protection is 20% and replenishment of protection during operations is 25% (% of construction total). Has evidence from Rampion 1 been drawn upon to inform the Rampion 2 export cable burial and protection requirement assessment?		Natural England advises that further evidence is required to support the Application before we are able to provide further advice on the potential impacts. See also our related comments on Benthic Ecology.	Please refer to the Applicant's response to comment D58 above. The Applicant has drawn on general experience from the development of other offshore wind farms it has designed and built to inform the MDS export cable burial design and cable protection requirements However, the Rampion 1 cable route is at least 12 km to the east and does not provide direct evidence or analogue for the Proposed Development route. Regarding Rampion 1 post-construction monitoring data please see the Applicant's response to Comment D2 above.

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Table 4-10 Applicant's response to Natural England - Appendix E (Fish and Shellfish Ecology)

Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
E1	F & S 8.3.41 IPSFMP Table 3.1	We note that Natural England's advice letter of the 14/07/2023, based on the Targeted meeting - Underwater Noise and Impacts on Fish Receptors, 30/03/2023, has been omitted. This letter contains key advice on outstanding issues and concerns in relation to black seabream as highlighted in the summary at the start of this section		We advise this document is updated to include consideration of our advice of the 14/07/2023.	The Natural England advice letter was submitted with the Application within the **Evidence Plan (Part 10 of 11) [APP-252]**. The Applicant has reviewed the advice letter received from Natural England on the 14 July 2023, and acknowledges the key concerns raised. The advice letter was received in July, after the drafting of the **In Principle Sensitive Features Mitigation Plan [APP-239]**, therefore the Plan was not updated to include Natural England's feedback. The points raised in the advice letter have therefore been addressed in this response below. The Applicant notes Natural England's concerns about the potential for piling activities to be undertaken in the latter part of the black bream nesting period (July) and confirms that a full piling exclusion from March-July inclusive would have significant issues for the practical construction of the Proposed Development. Following a detailed assessment undertaken on a precautionary basis, as detailed in **Chapter 8: Fish and Shellfish Ecology, Volume 2 [APP-049]**, the Applicant is confident that a full piling restriction from the 01 March to 31 July is not appropriate or required to avoid significant population level effects on nesting black bream. Whilst, in 2021, the black seabream spawning/nesting period was extended to include the month of July, spawning/nesting activity during this month is considerably reduced and therefore with much less potential for impact on the population breeding success than the preceding months, as set out in **Chapter 8: Fish and Shellfish Ecology, Volume 2 [APP-049]**, with 5% of nests attended by males by the 10th July and 0% by the 30th July in a 2020 survey (Seven Tenths Ecology Ltd. (7TE) (2021)). This compared with 89.4% nests attended by males in June of the same year. Noting that some nesting is still potentially occurring in July, the **In Principle Sensitive Features Mitigation Plan [APP-239]**, the delivery of which secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **Draft Development Consent Order (DCO) [PEPD-009]**) sets out multiple mitigation measures to be implemented during the month of July; these include (in the event that piling is undertaken in July in the the array area) the combination of a low noise hammer technology and

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					Double Big Bubble Curtain, and a sequencing approach to piling starting in locations furthest from the MCZ. Through the application of a variety of mitigation measures in July, the Applicant is confident that piling operations will not hinder the Kingmere MCZ conservation objectives. The Applicant also notes that Natural England does not support the use of the 141dB threshold to inform the zoning approach to mitigation as detailed in the **In Principle Sensitive Features Mitigation Plan [APP-239]**. The Applicant considers the disturbance threshold of 141dB SELss (Sound Exposure Level, single-strike) as suitably precautionary, as it is based on a short-lived startle response observed in sea bass. As informed by Popper et al., (2014), behavioural disturbances are considered to be long term changes in behaviour and distribution, and should not include effects on single animals, or small changes in behaviour such as startle responses or minor movements. The use of the disturbance threshold of 141dB SELss is therefore considered to be suitably precautionary. Further to this, the approach used by the Applicant to define a suitable threshold for disturbance from underwater noise aligns with that used in other OWF applications and assessments (e.g. Hornsea Four Offshore Wind Farm Application (Ørsted, 2021) Hornsea Project Three Offshore Wind Farm Application (Ørsted, 2018), Sheringham and Dudgeon Extension Offshore Wind Farm Projects Application (Equinor, 2022) Awel y Môr Offshore Wind Farm Application (RWE, 2023)) and therefore complies with current practice when approaching issues such as scientific data gaps and uncertainties, in order for consenting decisions to be made. The Applicant welcomes Natural England's support for the ambient noise survey conducted during the black bream nesting period. The Applicant confirms that the data were submitted to the Examination by Procedural Deadline A of 16 January 2024.
E2	Table 8.10	We note that the data sources used to inform the Environmental Statement (ES) Assessment appear to be up to 2020. We seek clarity that this has been updated since 2020, to ensure it includes current best available evidence in 2023?		We advise this is reviewed and updated.	The Applicant has undertaken a review of the data sources used to inform the Environmental Assessment and can confirm that there are no significant changes to the baseline environment as defined in **Chapter 8: Fish and Shellfish Ecology, Volume 2 [APP-049]**.

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
					The Applicant notes Natural England's request to review aggregates 2022 survey data in relation to black seabream reproductive activities (comment E16). The Applicant is in discussions to potentially purchase additional black seabream datasets.
E3	8.5.8, 8.6.28, 8.6.30-8.6.37	Natural England defer to Cefas on the assessment methodology and its conclusions in relation to herring and sandeel.		We advise you refer to the comments of Cefas as advisors to the MMO on this matter	This is noted by the Applicant. Responses to specific feedback from the MMO on the assessment methodology and its conclusions relative to herring and sandeel have been provided.
E4	Table 8.11	We concur that sandeel are a key prey species in relation to tern species designated under the Solent and Dorset Coast Special Protection Area (SPA). We advise that tern species are also known to prey on herring.		We advise that both species are considered as prey species for the tern features of the SPA throughout the assessment	This is noted by the Applicant, and indirect effects from potential impacts to prey availability on ornithological receptors have been assessed for both species in **Chapter 12: Offshore and intertidal ornithology, Volume 2 [APP-053]**. The potential effects on prey species from construction activities to impact tern species from south coast SPAS was discounted (i.e. with respect to the common tern features of Pagham Habour SPA and Solent and Dorset SPA). This potential pathway was removed on the basis of tern species were scarcely recorded foraging withing the Proposed Development Array Area during sitie specific surveys which took place during the breeding season.
E5	Table 8-16	We note that the descriptions of significance in this matrix do not match the ones used in the text.		We advise this is amended.	The Applicant requests that Natural England provide clarification to the ExA on where there are inconsistencies between the matrix in Table 8-16 in **Chapter 8: Fish and Shellfish Ecology, Volume 2 [APP-049]** and the assessment text.
E6	Table 8.12	We note that there are inconsistencies between the worst-case scenario presented here in terms of piling and in Appendix 11.3, particularly in relation to the maximum duration of piling. These inconsistencies exist across all areas of the project and must be rectified.		We advise that the assessment is updated to ensure the worst case is consistently presented across all the relevant documents.	Please refer to the Applicant response to comment E8, where the worst-case piling scenarios used to inform the assessment are defined. The Applicant acknowledges the inconsistency in terms of piling durations and confirms this has been corrected to "*4.5 hours piling per pile"* in the Errata submitted at Pre-Examination Procedural Deadline **[PEPD-001]**.
E7	Table 8.12	We note that for the interconnector cable the 'maximum rock protection area for interconnector cables (based on 20% of 10km cable requiring protection) = 122,000m^{2}'. However, we note in the project description chapter the length of cables is 40km rather than 10km		We advise this is corrected and the assessment updated as necessary.	The Applicant acknowledges this inconsistency and confirms this has been corrected to "*40 km*" in the Errata submitted at Pre-Examination Procedural Deadline **Cover Letter [PEPD-001]**.

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
E8	Table 8.17	We advise that this table includes a line stating the figure number for the model of each of these scenarios. We advise all models need to include the boundaries of the MCZs for us to be able to understand the impacts on MCZ features. We note that Appendix 11.3 only models the following scenarios in relation to fish: Single location: • Worst-case monopile foundation – single pile • Worst-case monopile foundation – 2 sequentially installed piles Worst-case jacket foundation -single pile • Worst-case jacket foundation – 4 sequentially installed piles • Worst-case monopile/jacket foundation modelling using the Hawkins et al. (2014) Multiple Locations (2 locations): ▸ Single monopile – installed simultaneously both E and W Locations ▸ 2 sequentially installed monopiles – installed simultaneously at both E and W Locations • Single jacket pile – installed simultaneously at both E and W Locations • 2 sequentially installed jacket piles- installed simultaneously at both E and W Locations (noting the table refers to jacket piles, but the descriptions on figure 4.9 and table 4.37 refer to monopiles, one of which is incorrect) With regards to piling at multiple locations, only the impacts of 2 sequentially installed piles at two different locations at one time has been modelled. Therefore, it is unclear why Table 8.17 refers to more than four piles being installed simultaneously at the East and West locations. The spatial worst case appears to relate to Table 4.37 of Appendix 11.3. We advise explanation is provided on how 2 pin piles piled at the same time which require up to 2500kj hammer energy can create a greater worst-case scenario than 2 monopiles being piled at the same time with up to 4400kj hammer energy.		Advise that clarity is provided on the worst-case scenario being presented and demonstration that this has been modelled.	The Applicant confirms that the following scenarios were modelled to inform the underwater noise assessments for fish, marine mammals and the marine conservation zone assessment. Monopile foundations (13.5 m diameter) – single pile, - 2 sequentially installed piles. • Jacket foundation (4.5 m diameter) - single pile, - 4 sequentially installed piles • Monopile/jacket foundation modelling using Hawkins et al. (2014) Multiple Locations (E and W Locations): • Monopile foundations (13.5 m diameter) - single pile installed simultaneously, - 2 sequentially installed piles installed simultaneously at both E and W Locations. • Jacket foundation (4.5 m diameter) - single pile installed simultaneously at both E and W Locations., - 4 sequentially installed piles installed simultaneously at both E and W Locations. The modelling outputs from the sequential installation of 4 jacket piles at the East and West locations in the array area are presented in **Table 4.37** of **Appendix 11.3: Underwater noise assessment technical report, Volume 4 [APP-149]**. The Applicant confirms that the descriptions of **Figure 4.9** and **Table 4.37** of **Appendix 11.3: Underwater noise assessment technical report, Volume 4 [APP-149],** should refer to the sequential installation of four jacket piles at the East and West locations, rather than the simultaneous monopile installation scenario. This clarification will result in no impact on the outcome of the assessment of underwater noise impacts. The maximum design scenario for stationary fish receptors will be the sequential installation of four pin piles, at two locations (East and West locations in the array area) within a 24-hour period. When the receptor is presumed to remain stationary, this will create a total area

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					of ensonification that is greater than the simultaneous installation of two monopiles. This is different to the fish and marine mammal fleeing model, where the monopile scenario introduces more sound energy to the water more quickly, while the receptor remains relatively close to the pile. By the time the third and fourth pin piles are driven, the fleeing animal is much further from the pile and so the additional exposure this causes to the total is small.
E9	Table 8-13	The spatial worst case appears to relate to Table 4.37 of Appendix 11.3. We advise explanation is provided on how 2 pin piles piled at the same time which require up to 2500kj hammer energy can create a greater worst-case scenario than 2 monopiles being piled at the same time with up to 4400kj hammer energy.		Same answer as line above.	Please refer to the Applicant's response to comment E8 above.
E10	8.9.24, 8.9.195	Natural England defer to the advice of Cefas but based on the overlap with the Downs herring spawning ground (IHLS larval abundance data) shown in the Figures document, it seems unlikely to be appropriate that the magnitude of impact has been assessed as negligible for both TTS and behavioural impacts		We advise that you refer to the advice of Cefas on this matter, but Natural England highlight that the magnitude assign needs to be reviewed based on the IHLS data and that it is likely mitigation will be required.	As larvae lack swim bladders or the connection between the swim bladder and the inner ear has not yet formed at this stage, they are therefore considered to be less sensitive to underwater noise than spawning adult herring. The Applicant has assessed the potential for impacts on eggs and larvae in **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]**. Given the stationary nature of eggs and larvae the potential for behavioural impacts is considered limited, therefore the worst-case impact ranges for effects on larvae is considered to relate to the potential for temporary threshold shift ("TTS"). As detailed in **paragraph 8.9.238** *et seq* in **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049],** given the low degree of disturbance at intermediate (100s of metres) and far (1,000s of metres) of larvae (in accordance with the Popper et al., (2014) criteria) and the distance of areas of high-density herring larvae from the Proposed Development array area (30 km), the risk of disturbance to herring larvae is considered to be low, and therefore not significant. Notwithstanding this, as detailed in the **In Principle Sensitive Features Mitigation Plan [APP-239]**, the Applicant has committed to the implementation of at least one offshore piling noise mitigation technology, therefore mitigating against potential impacts from underwater noise to herring eggs and larvae from spawning in

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					November through to January (Coull et al., 1998). The Applicant has therefore presented the mitigated mortality and potential mortal injury impact ranges (210 dB SEL_{cum}) relative to areas of high densities of herring larvae in **Appendix 9 – Further Information for Action Points 38, 39 – Underwater Noise (Document reference 8.25.9)**. As evident, with the implementation of at least one noise abatement measure, there is no interaction of the recoverable injury impact contours with areas of high-density herring larvae. Furthermore, the Applicant is undertaking underwater noise modelling of both unmitigated and mitigated piling scenarios, using the precautionary 135 dB threshold, to define the potential range of behavioural effects on spawning adult herring. The Applicant reiterates that they do not support the application of the 135 dB SEL contour to establish behavioural impact ranges for sensitive receptors. Specifically, this threshold is based on a study undertaken within a quiet loch on fish not involved in any particular activity (i.e. not spawning) It is therefore not considered appropriate to use this threshold within a much noisier area such as the English Channel (which is subject to high levels of anthropogenic activity and consequently noise), as the fish within this area will be acclimated to the noise and would be expected to have a correspondingly lower sensitivity to noise levels. The outputs of the modelling are presented at Deadline 1 in **Appendix 9 – Further Information for Action Points 38, 39 – Underwater Noise (Document reference 8.25.9)**.
E11	F & S – 8.5.6- 8.5.7, 8.6.80, 8.6.85 MCZ A-Table 2.2 (point 9) and Table 2.3 IPSFM 2.5.4	We note that 'A site-specific geophysical survey was undertaken between July and August 2020'. As Natural England have raised throughout the evidence plan process this only overlaps with the end of the spawning season for black seabream. Any data collected in August falls outside of the spawning season. The 'Site-specific benthic grab and drop-down video (DDV) surveys were also undertaken between December 2020 and February 2021', far outside of the black seabream season. Natural England therefore disagree that this information can be relied upon 'to supplement existing data on likely black seabream nesting locations in areas relevant to the Proposed Development, but outside of areas previously subject targeted survey (principally within the			As requested in an advice note from Natural England (20 May 2022), the timings and spatial limitations of the geophysical surveys have been recognised in **Section 8.5** in **Chapter 8: Fish and shellfish ecology [APP-049]**. Principal densities and aggregations of black bream nesting sites will be mapped in the Final Sensitive Features Mitigation Plan, utilising historic desk studies, survey data drawn from the aggregates industry surveys, geophysical survey data for the export cable corridor carried out in 2020 and the pre-construction data that will be collected post-consent. The final mitigation plan will be provided post-consent once project parameters are finalised (as secured in

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		Kingmere MCZ)', given the timing of the surveys. Natural England disagree that the data sets referred to 'allows a conclusion to be drawn that nests are likely to be present across a discrete area of the export cable corridor, and as such demonstrates the data to be representative and robust for the purposes of EIA'. We advise there is also no evidence presented to justify the statement 'that the assessment takes a precautionary approach' Natural England advises that the aggregates data is spatially discrete and therefore does not fill data gaps for areas outside of these boxes. We advise areas located outside of these survey boxes should not be considered to be absent of black seabream nests. Point 8.6.80 also suggests 'Sussex IFCA data indicated that the majority of black seabream nest areas in 2014 fell outside of the repeat monitoring areas'.			Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**).
E12	8.5.12	It is stated that 'The post consent survey, undertaken as part of a suite of pre-construction surveys, will allow a determination to be made as to the extent of the nesting area, and specifically the key nesting areas, in order to identify the best cable route, minimising interaction with key sensitive features where practical, prior to offshore export cable installation'. Natural England advise that due to both seasonal variation and interannual variation with regards to nesting locations a single pre-construction survey should not be presumed as definitively and absolutely defining nesting locations. We advise that the focus should be on ensuring that that survey identifies potentially suitable habitat for nesting and avoids this.		We advise that an appropriate methodology for pre-construction surveys has yet to be agreed and that this should be agreed with the MMO in consultation with Natural England. Whilst we understand that the final details of this are likely to be agreed post-consent, we advise that an outline plan should be included in the In Principle Monitoring Plan.	The Applicant agrees that the details of the pre-construction survey are necessarily finalised post-consent and agreed with the MMO, in consultation with Natural England. The post-consent survey will consist of high-resolution full sea floor coverage swath-bathymetric surveys, inclusive of side scan surveys and MBES undertaken to International Hydrographic Organization (IHO) Order 1A standard (secured by dML Condition 16, Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**.
E13	8.6.77, 8.6.88	It is stated that 'Historical analysis of black seabream monitoring data identified black seabream nesting areas tend to correspond to shallow waters (<10m) with thin layers of coarse sediments (10 to 30cm deep) overlying bedrock within the general vicinity of rocky outcrops (GoBe, 2015). BGS data identified areas of chalk beds within the intertidal area of the offshore export cable corridor and within the north-eastern tip of the array area (see Figure 8.13, Volume 3 of the ES (Document Reference 6.3.8))'. However, the data presented in 8.13 is broadscale. Additionally, no key is provided to		Natural England advises consideration is given to what site-specific information could be gathered pre-consent to strengthen this information. We advise this information could be used to improve confidence in avoiding suitable black bream nesting habitat were possible within the cable corridor.	This advice is welcomed by the Applicant. The Applicant is confident that all available data has been provided in **Chapter 8: Fish and shellfish ecology, Volume 2** **[APP-049]**. As detailed in the **In Principle Sensitive Features Mitigation Plan** **[APP-239]**, the final mitigation plan, which will be developed post consent based on the final design parameters (secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**), will map out the principal densities and aggregations of nesting sites utilising historic desk

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		explain what the area shaded in each colour signifies.			studies, survey data drawn from the aggregates industry surveys, geophysical survey data for the export cable corridor carried out in 2020 and the pre-construction data that will be collected post-consent. These data will be used to inform the subsequent micrositing around sensitive features within the export cable corridor.
E14	8.6.79	We advise that it is important to distinguish bream as a feature of a designated site in a key nesting location (Kingmere MCZ), from the general population described over a wide area in this paragraph.		We advise clarity is provided on this throughout the ES chapter and the MCZ assessment.	The Applicant confirms that impacts on black seabream as a receptor have been assessed in **Chapter 8 Fish and shellfish ecology, Volume 2 [APP-049]**. The potential for impacts on black seabream as a feature of the Kingmere MCZ have been assessed in the **Draft Marine Conservation Zone assessment [APP-040]**.
E15	8.6.81	The current licence conditions for Area 453 are incorrectly stated.		We advise this is confirmed with the MMO and corrected in the text. Our understanding is that the relevant condition on the licence for 453 states 'All licensed activities must not be undertaken in the Eastern Section of Area 453 (Zone B) between 1st April and 31st July inclusive, and in the Western Section of Area 453 (Zone A) between 1st April and 30th June'.	The Applicant acknowledges this inconsistency and confirms this has been corrected to the relevant condition, in the Errata submitted at Pre-Examination Procedural Deadline **Cover Letter [PEPD-001]**.
E16	8.6.85	Natural England advise that the data presented here does not represent the full best available evidence base. This is because further surveys were conducted in 2022 and reported in March 2023. We advise that the ES is updated to reflect this data, particularly in relation to reproductive activities in July. We advise that the aggregates data supports reproductive activities occurring in July over multiple years of data.		Natural England's position is that the aggregates data supports our understanding that reproductive behaviour occurs in July, hence the inclusion of July in the sensitive season in line with the conservation advice. Therefore, we advise July should not be regarded as less important in relation to mitigation measures proposed.	The Applicant is confident that the data presented in **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]**, which span 17 years, provide a robust baseline, considered to be sufficient for the purposes of EIA, noting that an additional year's data are now available from the aggregates companies. The data suggested by Natural England are not publicly available. The Applicant is in discussions to potentially purchase additional black seabream datasets.

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E17	8.6.87	It is stated 'Site specific data indicate that the area surveyed as part of the aggregate extraction monitoring is likely to represent a discrete area of sediment veneer that does not extend across the full export cable corridor'.		We advise a reference to this information is provided to support this statement. We agree that it should be considered that direct impacts on spawning areas are still possible.	The Applicant welcomes this agreement with Natural England and confirms that in order to mitigate against direct disturbance impacts on breeding black bream within the export cable corridor, the Applicant has committed to ensuring that all cable installation activities within the offshore export cable corridor area are undertaken outside of the identified breeding season of March to July (as defined in the **In Principle Sensitive Features Mitigation Plan** **[APP-239] (**secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**). The Applicant confirms that the site-specific data referenced in **paragraph 8.6.87** of **Chapter 8: Fish and shellfish ecology, Volume 2** **[APP-049]** refer to the environmental monitoring reports for marine aggregate extraction areas (Area 435/ 396, Area 453 and Area 488) within the region, as detailed in **Table 8-10** in **Chapter 8: Fish and shellfish ecology, Volume 2** **[APP-049]**.
E18	8.6.89	It is stated that 'there is a risk of direct disturbance to areas of nesting and / or nesting potential that may not be avoidable. Whilst a specific environmental measure has not been embedded within the design of the Proposed Development at this stage, there are a suite of measures available to reduce the magnitude, and therefore significance of direct disturbance (see RED, 2022)'.		Natural England understood that the Applicant had committed to avoiding direct impacts on all known black seabream nesting areas in the first instance, where possible. Whilst we understand that mitigation measures have been proposed, greater confidence is required in the efficacy, as well as their potential to succeed, in the seabed conditions along the cable route. The Applicant needs to demonstrate that these measures will be effective or introduce additional mitigation.	The Applicant has made a commitment to avoid direct impacts on all known black seabream nesting areas in the first instance, where possible (C-269) as detailed in the **Commitments Register** **[APP-254]** and the **In Principle Sensitive Features Mitigation Plan** **[APP-239]** secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**). The cable routing design will be informed by pre-construction surveys, and a Cable Burial Risk Assessment, undertaken when the final design parameters are determined post-consent, as conditioned in Part 2, Condition 11(1)(a) (Deemed Marine Licence). The Applicant confirms that the mitigation proposed provides for eventualities where this is not possible. As detailed in **Chapter 8: Fish and shellfish ecology, Volume 2** **[APP-049]**, the mitigation measures proposed include the adoption of specialist offshore export cable laying and installation techniques to minimise direct and indirect seabed disturbance footprint to reduce impacts on sensitive features.
E19	Table 8-18	NE agrees that the best available evidence would place black seabream in hearing category 3, and seahorse in hearing category 4. It should, however, be noted that these species were not specifically classified within the original citation.		We advise this is clarified in the text.	Clarification of these classifications will be provided in the Errata to be submitted at Deadline 1 (see Covering Letter).

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E20	8.9.16	Natural England support black seabream (as well as herring, sandeel, and seahorses) being modelled as stationary receptors, we do not consider fleeing receptor models appropriate for these species		We therefore advise any reference or modelling of fleeing receptors should be disregarded in relation to these species	The Applicant considers that the fleeing receptor approach is relevant where mobile species are not spatially restricted (due to breeding activity for example). Where species are restricted in such ways, the assessment has been undertaken using the static receptor modelling outputs. The Applicant confirms that breeding black seabream, spawning herring, sandeel, and seahorses have all been assessed as stationary receptors when regarding impacts from underwater noise.
E21	8.9.21	Natural England question why the south modelling location has been considered the worst case within the array area. We not this is not the closest modelling location to Kingmere MCZ or Beachy Head West MCZ.		We advise that justification is provided in an updated assessment.	Due to the bathymetry of the site, the greatest impact ranges result from piling operations at the south modelled location. It is for this reason that the Applicant has presented these ranges in **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]**. The full suite of underwater noise modelling results is provided in **Appendix 11.3: Underwater noise assessment technical report, Volume 4 [APP-149]**. The worst-case noise modelling contours in relation to specific features, such as the Kingmere MCZ are presented spatially, in **Figures 8.18 to 8.21** in **Chapter 8: Fish and shellfish – Figures, Volume 3 [APP-081]**.
E22	Commitment 52 (Also in MCZ A), F & S 8.9.48 MCZ A (7.2.6)	A piling Marine Mammal Mitigation Protocol (MMMP) will be implemented during construction. A Draft Piling Marine Mammal Protocol (Document Reference 7.14) has been submitted with this application, which includes soft start procedures.		Natural England consider the MCZ features (particularly black seabream and seahorses) to be effectively static features, therefore mitigation measures that relate to fleeing features are not applicable. We therefore advise it is removed from the assessment in relation to these features, and more appropriate mitigation presented.	The Applicant confirms that the inclusion of **Draft Piling Marine Mammal Mitigation Protocol [APP-236]** in **Table 8-13** in **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]**, and in **Draft Marine Conservation Zone assessment [APP-040]**), as an embedded environmental mitigation measure purely relates to the use of soft start procedures for piling to deter mobile marine life, therefore reducing the noise exposure to mobile fish and shellfish receptors (such as black bream outside of the breeding season). With regards to mitigating against the potential for impacts to sensitive stationary receptors such as breeding black seabream and seahorse, further mitigation measures have been proposed. These are detailed in the **In Principle Sensitive Features Mitigation Plan [APP-239]** and include noise abatement measures and the development of a spatial and temporal zoning plan for piling.

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E23	Commitment 274 (Also in MCZ A) Commitment 280 and 281 (Also in MCZ A and IPSFMP) MCZ A (7.2.24)	Commence piling at locations furthest from the MCZ the Kingmere MCZ during the black seabream breeding period (March-July). No piling will occur in the piling exclusion zones during the seabream breeding period (March-July) which will be defined by the modelling in the Final Sensitive Features Mitigation Plan. No piling within the western part of the Rampion 2 offshore array closest to the Kingmere MCZ during the majority of the black seabream breeding period (March – June); and sequenced piling in the western part of the Offshore Array Area during July in accordance with the zoning plan to be set out in the Final Sensitive Features Mitigation Plan.		Based on the modelling for the worst-case scenarios provided, we consider that piling at locations further from Kingmere MCZ, could still result in TTS and behavioural impacts within Kingmere MCZ. Therefore, we are not persuaded that this mitigation would prevent the conservation objectives being hindered. We advise that based on the evidence presented to date, our outstanding concerns around the lack of a suitable threshold and the likely efficacy of mitigation measures, the exclusion should cover all piling works March to July inclusive. We also question if the worst-case scenario including simultaneous and sequential pilling has been considered in the mitigation plan. If not, this should be reviewed. We highlight that there is a risk that delaying the production of a final mitigation plan to the and delay, and urge the Applicant to bring something forward prior to consent that Natural England can agree	The Applicant confirms that the behavioural threshold used to inform the zoning exercise and mitigation (141dB re 1 µPa2s (SELss)) is for single strike, and represents disturbance, which by nature does not require or consider timed exposures. Multiple piling scenarios are therefore not applicable for this criterion. As presented in the **In Principle Sensitive Features Mitigation Plan [APP-239]**, through the implementation of noise abatement measures, and seasonal restrictions and zoning, the Applicant is confident that the conservation objectives of the Kingmere MCZ will not be hindered due to the measures of precaution. Furthermore, significant measures of precaution are applied throughout the mitigation plan, including the use of a precautionary disturbance threshold of 141 dB SELss based on research by Kastelein et al. (2017) (**Appendix 6**) (which recorded a short-lived response to 141 dB (SELss) in seabass), and the modelling of minimal underwater noise attenuations afforded by each noise abatement measure. The Applicant confirms that the production of a final mitigation plan pre-consent is not possible given the need to use the final design parameters and piling parameters, which will only be known once design refinement has been completed post consent. The **In Principle Sensitive Features Mitigation Plan [APP-239]** presented alongside the Application provides both the key principles and the framework upon which the final Mitigation Plan will be drafted for agreement with the MMO, in consultation with Natural England (as secured in Condition 11 (1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**).
E24	Commitment 265 (Also in MCZ A and IPSFMP) MCZ A 7.2.29	At least one offshore pilling noise mitigation technology will be utilised to deliver underwater noise attenuation in order to reduce predicted impacts to sensitive receptors at relevant Marine Conservation Zone (MCZ) sites and reduce the risk of significant residual effects on the designated features of these sites.		Notwithstanding Natural England's current concerns regarding the efficacy of mitigation measures, we advise that instead of being one measure, this commitment should be to use the noise abatement combination that achieves the greatest amount of noise reduction year-round. In relation to reducing impacts on MCZ features to an acceptable level, it needs to be demonstrated that the mitigation will be sufficient given the environmental	The Applicant is undertaking additional work to provide a comparison of the environmental conditions at the Proposed Development with other projects where Noise Abatement Systems (NAS) have been deployed, this will be submitted to the Examination in due course.

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				conditions in the Rampion 2 array to reduce noise to an agreed level within the MCZ's. Environmental conditions that could affect efficacy, include factors such as depth, the speed of local currents, wave height, wind speed and geology. We advise this information needs to be submitted into the Examination.	
E25	8.9.49 8.9.49	It is stated that 'Although it is likely that potential predators will also vacate the area during potential piling thus limiting this potential effect'. Natural England advise that no evidence has been presented to support this statement. We are aware that observation of nests in Dorset included predation by invertebrates such as whelks and urchins. We advise it should not be assumed that resident animals will have both the swimming capability and incentive to vacate the area, particularly if they are territorial/highly residential animals.		Natural England advise that no evidence has been presented to support this statement, we advise this is provided or this assumption is removed from consideration in the assessment	This advice is welcomed by the Applicant. The Applicant confirms that a precautionary approach has been taken, assuming the potential disturbance of breeding black bream from piling operations. The Applicant has therefore made several commitments to ensure no population level effects arise from underwater noise from piling. These are detailed in full in the **Commitments Register [APP-254]** and the **In Principle Sensitive Features Mitigation Plan [APP-239]**. The text "'Although it is likely that potential predators will also vacate the area during potential piling thus limiting this potential effect'" has been removed from the paragraph, this has been added to the Errata submitted at Deadline 1.
E26	8.9.56, 8.9.80, 8.1.12.3	We note that the 100km^2 is stated as the underwater noise search area in the cumulative effects section. However, the distances stated for simultaneous piling are significantly greater than this. We advise the use of 100km^2 to define the underwater noise study area across the documents, may not represent the worst-case scenario.		We advise that the appropriateness of the 100km^2 search area is re-considered, and further justification is provided.	The Applicant clarifies that the cumulative search area is defined in **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]** as a 100 km buffer from the proposed Order Limits, and not a 100 km^2 area. As such the 100 km buffer is significantly larger than the impact areas presented for simultaneous piling.
E27	F & S 8.9.50, 8.9.133, 8.9.199 MCZ A 7.2.12, 7.2.13	Natural England do not agree that the modelling locations used represent the worst-case scenario within Kingmere MCZ. We advise that modelling from the location within array area closest to the MCZ would appear to represent the greatest potential for overlap for a single pile. Visually it appears a location to the northeast of the current north-western modelling location could result in greater overlap with the MCZ in relation to 207dB, 203dB, and 186dB contours. Additionally, where piling is conducted simultaneously at two locations in terms of the MCZ we question what the closest distance between locations is likely to be, and how this is considered in		We advise that further explanation and justification is provided to explain how this has been considered.	The Applicant acknowledges that in using two piling locations that represent the maximum separation within the Proposed Development boundary, and therefore the maximum calculable total potentially affected area, neither of these locations are close to the Kingmere MCZ. However, for the recoverable injury impact or greater, the rigs would both have to be close to one another with one of the WTG installation locations directly adjacent to the MCZ even under worst case, unmitigated, conditions: the recoverable injury range is approximately 5 km towards shallower water to the north in the NW location, close to the MCZ. The greatest combined effect is between two noise sources, and any increase to the outer extents (i.e. further away from a secondary piling noise source, towards the MCZ) is generally minimal. As piling is not

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		terms of impacts on the MCZ. Currently the east and west locations appear to represent one of the better cases for the MCZ, as opposed to the closest together possible piling locations in closest proximity to the MCZ. We advise further explanation is required on this before Natural England can agree on there not being a significant impact in relation to mortality, potential mortal injury and recoverable injury of black seabream.			proposed at the closest location to the MCZ at its sensitive time, any increased risk of recoverable injury or greater effect is not expected, unless under combined layers of worst case scenarios (as set out in the **In Principle Sensitive Features Mitigation Plan** [**APP-239**].(secured in Condition 11 (1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**). The Applicant, however, has taken a precautionary approach in the assessment and has defined mitigation measures to ensure no disturbance impacts from the Proposed Development will occur within the MCZ boundary, and therefore the Conservation Objectives of the MCZs will not be hindered. These are detailed in the **Commitments Register** **[APP-254]** and the **In Principle Sensitive Features Mitigation Plan** **[APP-239]**.
E28	F&S 8.9.57, 8.9.138, 8.9.205 MCZ A 7.2.12, 7.2.13	Natural England advises that it is the interaction with the boundary of the MCZ that should be referred to here, and not the perceived highest density nesting locations within the MCZ. We advise this needs to be amended across the assessment. In relation to recoverable injury, we seek clarity that this contour does not overlap with the MCZ in any of the worst-case scenarios. We note that Figure 8.18 for example seems to show this contour on the boundary not going into the MCZ. We advise that should any of the worst-case scenarios involve the 203dB contour overlapping with the MCZ (even over a small area) this is likely to change our advice on this matter.		We advise that clarity is provided here in relation to the interaction with the boundary of the MCZ.	The Applicant welcomes the advice provided by Natural England and confirms that the areas of primary importance for black seabream are identified in **Figures 8.14a** and **8.14b** of **Chapter 8: Fish and shellfish – Figures, Volume 3** **[APP-081]**. The Applicant, however, has taken a precautionary approach in the assessment and has defined mitigation measures to ensure no disturbance impacts from the Proposed Development will occur within the MCZ boundary, and therefore the Conservation Objectives will not be hindered. These are detailed in the **Commitments Register** **[APP-254]** and the **In Principle Sensitive Features Mitigation Plan** **[APP-239]**. The Applicant reassures Natural England that the worst-case piling scenario recoverable injury impact contours have been presented in relation to the Kingmere MCZ (as shown in **Figures 8.18, 8.19 and 8.21** of **Chapter 8: Fish and shellfish – Figures, Volume 3** **[APP-081]**). Whilst the Applicant acknowledges a minor interaction of the 203dB contour with the Kingmere MCZ boundary, the Applicant would like to direct Natural England to **Appendix 11.3: Underwater Noise Assessment Technical Report, Volume 4** **[APP-149]**, where the built in precaution of the noise modelling is detailed, and therefore the recoverable impact ranges on the Kingmere MCZ are considered over precautionary. Furthermore, as detailed in the **In Principle Sensitive Features Mitigation Plan** **[APP-239]**, the Applicant has committed to the implementation of various noise abatement measures, inclusive of a piling restriction from

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					March through to June, the implementation of a piling sequencing plan in July, and the use of at least one offshore piling noise mitigation technology from August through to February. The Applicant has therefore presented the mitigated recoverable injury noise contours, relative to the Kingmere MCZ in **Appendix 9 - Further Information for Action Points 38, 39 (document reference 8.25.9)**. As evident, with the implementation of at least one noise abatement measure, there is no interaction of the recoverable injury impact contours with the Kingmere MCZ.
E29	8.9.58, 8.9.139, 8.9.206	Black seabream are protected by Kingmere MCZ, and under the second conservation objective this specifically includes 'the population (whether temporary of otherwise) of that species occurring in the zone be free of the disturbance of a kind likely to significantly affect the survival of its members or their ability to aggregate, nest, or lay, fertilise or guard eggs during breeding.' Natural England advise that this protection is afforded as black seabream are considered to be highly vulnerable during the breeding season due to their specific nest locations and nest guarding behaviours, which mean expending more energy, reducing their feeding opportunities, and increasing their predation risk. Overall, these behaviours take an increased physiological toll compared to non-breeding behaviours, and impacts affect larger proportions of the local population, and so during the breeding season the black seabream have a heightened sensitivity to disruptive impacts. Therefore, we advise that they are treated as a receptor with high sensitivity to impacts from underwater noise throughout the noise assessment. The current sensitivity of medium only takes into account the hearing sensitivity of the species and not the ecological sensitivity, effectively treating its behaviour as simply normal shoaling activity as opposed to specific black seabream spawning behaviours.		We advise that the sensitivity is amended to high.	The Applicant confirms that the sensitivity to underwater noise of the receptor is the primary measure of sensitivity to the impact. As detailed in paragraph 8.9.48 of **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]**, black seabream have swim bladders that are close but not intimately connected to the ear. It is on this basis that the receptor is considered by the Applicant to be of medium vulnerability. Due consideration of the spawning behaviours of black seabream within the Kingmere MCZ are incorporated into the underwater noise modelling. Whereby the receptor is considered a stationary receptor, therefore assuming increased exposure to underwater noise when guarding their nests. Furthermore, consideration of effects on life-cycle aspects is also given in terms of impact consequence (i.e. significance of effect), within the assessment.

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E30	8.9.138- 8.9.140	Natural England disagree with the downgrading of the magnitude of impact based on there being 'limited interaction with the areas of primary importance'. We advise clarification is provided that the area of primary importance included the closest boundary of the MCZ.		We advise this is clarified and if it is not MCZ boundary it is amended to this.	The Applicant confirms that the areas of primary importance for black seabream within the Kingmere MCZ are identified in **Figures 8.14a** and **8.14b** in **Chapter 8: Fish and shellfish – Figures, Volume 3** **[App-081]**. Whilst the Applicant acknowledges a minor interaction of the 203dB contour with the Kingmere MCZ boundary, the Applicant would like to direct Natural England to **Appendix 11.3: Underwater Noise Assessment Technical Report, Volume 4** **[APP-149]**, where the built in precaution of the noise modelling is detailed, and therefore the recoverable impact ranges on the Kingmere MCZ are considered precautionary. The Applicant however has taken a precautionary approach in the assessment and has defined mitigation measures to ensure no disturbance impacts from the Proposed Development will occur within the MCZ boundary, and therefore the Conservation Objectives will not be hindered. These are detailed in the **Commitments Register** **[APP-254]** and the **In Principle Sensitive Features Mitigation Plan** **[APP-239]**. he Applicant has presented the mitigated recoverable injury noise contours, relative to the Kingmere MCZ in **Appendix 9 - Further Information for Action Points 38, 39** **(document reference 8.25.9)**. As evident, with the implementation of at least one noise abatement measure, there is no interaction of the recoverable injury impact contours with the Kingmere MCZ.
E31	F& S 8.9.205 MCZ A 7.2.14	Natural England note that there is an interaction between the TTS contours and Kingmere MCZ. Based on the information presented Natural England does not have confidence the mitigation presented in C-265, C-274, C-281 will be sufficiently effective. Therefore, we do not agree that the impact can be consider negligible for TTS. We advise that an assessment with and without mitigation is provided to present the worst-case scenario. We advise that based on our lack of confidence in the mitigation measures, we cannot conclude that the conservation objectives of Kingmere MCZ will not be hindered by this impact.		We advise that information on the efficacy of the migration measures proposed in the same environmental conditions as are present at the Rampion 2 site is presented to demonstrate confidence that the noise levels would not exceed 186dB within the MCZ boundary.	The Applicant has provided underwater modelling outputs for the implementation of various noise abatement measures to ensure the Conservation Objectives of the Kingmere MCZ will not be hindered. Furthermore, the Applicant has also proposed seasonal restrictions and zoning to mitigate against impacts from underwater noise on sensitive features. These are provided in the **In Principle Sensitive Features Mitigation Plan** **[APP-239]**. In addition to this, the Applicant has applied significant measures of precaution when defining appropriate mitigation measures, including the modelling of conservative underwater noise attenuations which can be achieved by each noise abatement measure. The Applicant is undertaking additional work to provide a comparison of the environmental conditions at the

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					Proposed Development with other projects where NAS have been deployed, this will be submitted to the Examination in due course.
E32	8.9.247- 8.9.248	Breeding black seabream exhibit breeding behaviours that if subject to a behavioural response could even in the short-term lead to effects breeding success that could be significant. We strongly disagree that these effects can be considered to have no wider effect on the MCZ feature, considering the impacts of potentially failed breeding at Kingmere across the local population (given site fidelity) and in the light of the conservation objectives of the MCZ. We therefore advise that the application of the concept of acclimatisation to noise is inappropriate in this instance. This is because even if acclimatisation where to occur, the time frames over which it may occur would mean that it is likely this effect would have already had a significant impact on the breeding success of bream before this point, and that it is feasible breeding attempts could have failed for that year		We advise that this is Natural England's position on this point and that habitation is not taken into account within the assessment	The Applicant would like to highlight to Natural England that various measures of precaution have been applied when informing appropriate mitigation for black seabream. Firstly, as detailed in the In **Principle Sensitive Features Mitigation Plan [APP-239]**, a precautionary disturbance threshold has been applied (141dB SELss), based on the startle response of sea bass. As informed by Popper et al., (2014), behavioural disturbances are considered to be long term changes in behaviour and distribution, and should not include effects on single animals, or small changes in behaviour such as startle responses or minor movements. Therefore, the use of the 141dB SELss disturbance threshold is inherently precautionary. Furthermore, as detailed in the **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]**, evidence has shown the potential for receptors to habituate to repeated sound exposure (Anderson et al., 2011 (**Appendix 7**) ; Neo et al., 2018). Therefore, taking into account the precautionary disturbance threshold, and the implementation of proposed mitigation measures (including noise abatement measures, seasonal restrictions and zoning), the Applicant is confident that there will be no wider effects on sensitive features of the MCZs.
E33		In relation to black seabream as a feature of Kingmere MCZ, Natural England does not support a behavioural threshold being derived for black seabream from studies that: • Are a proxy species for black seabream, as opposed to directly studying black seabream; • Are based on playback, particularly when this is in a tank and does not represent well the effects of particle motion that would be expected as a result of pile driving in the open ocean; • Are undertaken in captivity as opposed on receptors in the wild;		We advise that this is Natural England's position on this point	The Applicant's position on the behavioural threshold for black seabream has been reliant upon existing literature and best available knowledge and understanding, as detailed in **Paragraph 8.9.247 *et seq***. of **Chapter 8: Fish and shellfish Ecology, Volume 2 [APP-049]**. Throughout the pre-application period, the Applicant has attempted to reach agreement with Natural England on a number of key issues through extensive work on this topic relating to, *inter alia*, establishing a disturbance threshold relevant to black seabream, upon which to inform the impact assessment and appropriate mitigation. These include, but are not limited to, the modelling of more precautionary disturbance thresholds, and the commissioning of dedicated surveys of ambient noise levels in 2022 and 2023 to provide contemporary site-

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		• Use for example an air gun as opposed to a noise source akin to piling noise; • Are conducted within a quiet loch as opposed to the open sea.			specific data, and the proposal of a variety of mitigation measures over the consultation period. As detailed in the **In Principle Sensitive Features Mitigation Plan [APP-239]**, the Applicant considers the disturbance threshold of 141dB SELss as suitably precautionary, as it is based on a short-lived startle response observed in sea bass. As informed by Popper et al., (2014), behavioural disturbances are considered to be long term changes in behaviour and distribution, and should not include effects on single animals, or small changes in behaviour such as startle responses or minor movements. The use of the disturbance threshold of 141dB SELss is therefore considered to be overly precautionary. Further to this, the approach used by the Applicant to define a suitable threshold for disturbance from underwater noise aligns with that used in other OWF applications and assessments (e.g. Hornsea Four Offshore Wind Farm Application (Ørsted, 2021) Hornsea Project Three Offshore Wind Farm Application (Ørsted, 2018), Sheringham and Dudgeon Extension Offshore Wind Farm Projects Application (Equinor, 2022) Awel y Môr Offshore Wind Farm Application (RWE, 2023)), and therefore complies with current practice when approaching issues such as scientific data gaps and uncertainties, in order for planning decisions to be made.
E34	8.9.261	Natural England disagrees with the addition of 30dB to the background noise levels based on the Radford et al. (2016) study, which was conducted on seabass, in a laboratory conditions and based on playback. We note Radford et al (2016) noted increases in ventilation rate (a secondary indicator of stress) due to noise increases which were less than 30dB above ambient levels. Therefore, we do not support the use of this study to justify a lack of behavioural disturbance for black seabream above ambient noise levels. We advise that Collett et al. (2012) included a temporally limited measure that is now 11 years out of date. Therefore, this cannot be relied upon as evidence. We also advise that consideration needs to be given to the fact that naturally occurring peaks are unlikely to represent a continuous noise source in the same way piling would. We understand Cefas have concerns with		We advise that the assessment is amended to account for these comments.	The Applicant recognises the challenges in using a study like Radford et al. (2016) (**Appendix 8**) to predict the effect of noise disturbance on seabream, given that the study was not conducted in an open sea area and based on a proxy species. However, the conditions can be compared based on background noise recorded: • 117 dB RMS, captive fish (Radford et al, 2016) • 115 dB RMS recorded at Rampion 1 (Collett et al, 2012) • 111-117 dB RMS recorded over 5 months at Proposed Development (Subacoustech, 2023) The species studied by Radford et al (2016), seabass, are more similar (physiologically and with respect to hearing sensitivity) to black seabream than those in the study recommended by Natural England i.e. sprat. Sprat have special structures mechanically linking the swim bladder

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		background noise being defined as peaks, as opposed to minimums.			to the ear, whereas black seabream have swim bladders that are close, but not intimately connected to the ear, and are therefore less sensitive to the impacts of underwater noise. Therefore, the Applicant maintains that the findings of Radford et al., (2016) are the most appropriate, as the study represents both conditions and fish species that are the most applicable and comparable to the black seabream situation at the Proposed Development, for which data is available.
E35	F & S 8.9.267, 8.9.278, 8.9.280 MCZ A Table 7-1, 7.2.19, 7.2.20, 7.2.22, 7.2.23	Natural England does not support the use of 141dB re 1uPa SELss (taken from Kastelein et al. (2017), as a threshold for black seabream behavioural disturbance and we do not agree that the threshold is highly precautionary. Natural England advise that this study cannot be used to predict fish behavioural responses to pile driving in the natural environment because: • The experiment was conducted in a bare 7m x 4m container, in which seabass occupied 25% of the space. As recognised by the authors, this highly artificial environment permits only a narrow range of natural responses. • The noise stimuli was produced by playing recordings of piledriving through speakers. As recognised by the authors, this method is highly limited and does not replicate pile driving at sea (e.g. the playback range was inhibited by the capacity of the speaker). • Behavioural response was monitored by video from a distance, and response classifications were based on the collective behaviour of the school. Individual physiological responses were not recorded (such as ventilation rate, blood chemistry) and neither did the survey design permit investigation of natural behavioural changes or subpopulation level impacts. • The study tested only 7 pre-defined noise levels, not a continuous spectrum. The lowest level of noise tested was 122dB re 1 mPa2 s which did elicit some responses in the main study (i.e it was perceived and reacted to by some of the seabass).		We advise that this is Natural England's position on this point. As an overarching task TL will provide a strategy on the strategy for delivering the Scheme, what is buildable in the context of the constraints NE is proposing. Lack of hammers, drills capacity.	Please refer to the Applicant's response to **E33** above.

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		Additionally, we advise that this study is not suitable to assess noise impacts to nesting black seabream in Kingmere MCZ for the following reasons: • The study was based on adult seabass, which do not exhibit demersal nest guarding or the breeding behaviours protected by Kingmere MCZ. • Natural England recognise that seabass and black bream are in the same hearing category, but note this is based solely on a grouping of physical characteristics and lacks any species specific information or context. We advise that fish are extremely diverse and exhibit complex behaviours in response to a changeable environment. The authors of Kastelein also make this point: 'Trying to predict behavioural responses simply by using energy in a model is not realistic, as responses to sound depend not only on the received level, but also on a large number of other sound parameters, the context, and parameters relating to the animal'. • The study found a 50% initial response threshold occurred at an SELss of 141 dB re 1 mPa2 s for 44cm sea bass. We note that 31cm seabass demonstrated a 50% initial response threshold occurring at 131 dB re 1 mPa2 s. Given Natural England's conservation advice suggests that juveniles black seabream mature at around 20cm in length as females and are commonly 35cm in length, we advise the use of a threshold for a larger 44cm sea bass is clearly not appropriate. • Seabass are broadcast spawners with pelagic eggs, and therefore they do not exhibit the same spawning, nesting and nest guarding behaviours as black seabream. This crucial element of black seabream ecology, as specifically detailed in the conservation objectives for the MCZ, needs to be duly considered in the impact assessment. We highlight that Natural England's has advised against this approach throughout the evidence plan process. We note that Figure 6 of Appendix 8.3 shows that even with using a			

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		141dB re 1uPa SELss, this noise contour covers the entirety of Kingmere MCZ. This Appendix also references Kojima et al. (2010), which relates to red seabream, which is again inappropriate as this species does not have the same spawning behaviours as black seabream. Natural England advise that any behavioural threshold must be specific to the species (black seabream), the site (Kingmere MCZ) and the conservation objectives (breeding/spawning behaviours of black seabream) in order to successfully quantify and mitigate for the impacts. Currently Natural England's advice is that we cannot conclude that the behavioural disturbance impacts of the project would not cause the conservation objectives of the MCZ to be hindered. We note in point 8.9.266 it is stated that 'the use of the identified thresholds to inform the assessment of behavioural impacts on fish and shellfish is not supported by RED' due to the lack of understanding of how a wild animal will respond and viability in existing noise studies. Natural England advise that when coupled with all the existing issues in this specific case, it does appear unlikely a suitable threshold can be agreed.			
E36	Appendix 8.3	Natural England support a further noise study being undertaken in 2023, given the temporal limitations of the previous 15-day study. Our understanding was that whilst this longer dataset would not be included with the ES, this would be available for the examination. Natural England advise that we are not content for this information to only be provided at the post-consent stage. We also advise that once this data is available there is still no certainty that a suitable behavioural threshold could be derived and agreed from this.		We advise that this data is provided as soon as possible.	**Appendix 8.4 Black Seabream Underwater Noise Technical Note and Survey Results [PEPD-023]** contains details of the additional survey undertaken in 2023 and was submitted at Pre-Examination Procedural Deadline.

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E37	8.9.280, Appendix 8.3, IPSFMP MCZ A 7.2.14 MCZ A 7.2.23	We advise that the efficacy of the measures in the environmental conditions of the Rampion 2 location has not been satisfactorily demonstrated. Based on the lack of evidence to derive a suitable threshold, even if the mitigation measures could be proven to achieve the level proposed, we advise this would not be sufficient to justify a Negligible magnitude of impact. We advise that in the context of the MCZ this should be a Major impact (i.e. there is a significant risk of the activity hindering the MCZ conservation objectives).		We advise that the magnitude of impact is revised.	The Applicant confirms that the magnitude of impact is determined after the implementation of the proposed embedded environmental mitigation (C-265, C-274, C-280, C-281 all secured in secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**)) during the black bream nesting season, which will ensure that the predicted noise levels at the black seabream nesting areas within the Kingmere MCZ do not exceed the 141dB level that could (on a precautionary basis) elicit a response from black seabream. Therefore, with the implementation of the proposed mitigation measures, the Applicant is confident that there will be a Negligible magnitude of impact, and therefore a Minor Significant effect.
E38	8.9.281	Given the proximity of Kingmere MCZ to both the cable corridor and the array, and the fact this is a designated feature of this protected site, their sensitivity to disturbance during the breading/spawning season, Natural England advise that the sensitivity of this feature should be high.		We advise that the sensitivity is revised.	The Applicant confirms that the sensitivity of black seabream to underwater noise is the primary measure of sensitivity to the impact. As detailed in paragraph 8.9.48 of **Chapter 8: Fish and shellfish Ecology, Volume 2 [APP-049]**, black seabream have swim bladders that are close, but not intimately connected to the ear, it is on this basis that the receptor is considered to be of medium vulnerability. Due consideration of the spawning behaviours of black seabream within the Kingmere MCZ is incorporated into the underwater noise modelling, whereby the receptor is considered a stationary receptor, therefore assuming increased exposure to underwater noise when guarding their nests. Furthermore, consideration of effects on life-cycle aspects is also given in terms of impact consequence (i.e significance of effect), within the assessment. In relation to potential habitat disturbance impacts (including potential impacts from increased SSC and smothering) from works undertaken within the cable corridor, the Applicant confirms the sensitivity of black bream has been assessed as high, and mitigation measures have been proposed in the **In Principle Mitigation Plan for Sensitive Features [APP-239]**.
E39	8.9.282	Due to our disagreement with both the magnitude of impact assigned to this assessment and the sensitivity of the receptor, we do not agree that this impact can be considered not significant.		We advise that this is revised in line with our comments above.	Please refer to the Applicants responses to E37 and E38 above.
Seahorses (see also comments on the MCZ Assessment for seahorses below)					

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E40	8.6.4, 8.6.18, 8.9.23, 8.9.338. 8.9.347, 8.9.366, 8.9.415, 8.10.54, 8.6.68	We note that one short-snouted seahorse (Hippocampus hippocampus) was found in the October to November 2011 surveys and three in the February 2012 surveys. Two were found in the north-eastern part of the Rampion 1 array and two in the western part. We note that short-snouted seahorse were also found in three post- construction trawls conducted in the autumn.		We note this is evidence of the potential for seahorse species to be present in the area, particularly overwinter (when they are understood to move offshore). We advise that the fact that they have been found on multiple occasions from surveys that only offer a short snapshot in time, indicates their consistent presence, but that conclusions should not be drawn on them only being found in low numbers throughout the assessment based on this. The assessment should be updated to reflect the this	The Applicant is confident that based on these data presented in **Chapter 8, Fish and Shellfish Ecology, Volume 2 [APP-049]**, seahorse numbers within the vicinity of the Proposed Development are generally low. The Applicant has undertaken a suitably precautionary assessment and assumed the presence of overwintering seahorse in the vicinity of the Proposed Development. Therefore, as detailed in the **In Principle Sensitive Features Mitigation Plan [APP-239]**, as a further precaution, the Applicant has committed to the use of at least one offshore piling noise mitigation technology for the duration of the construction phase, this will ensure any potential for impact on seahorse in its offshore winter phase is minimised.
E41	8.9.75, 8.9.151, 8.9.219	We seek clarification that the locations modelled represent the closest location piling could occur in relation to each MCZ designated for seahorse.		We advise clarity is provided and the assessment updated if needed.	The Applicant confirms that locations modelled represent the extents of the Proposed Development boundary. The modelling locations used to inform the assessment of potential impacts on the features of the Beachy Head East and Beachy Head West MCZs (**Draft Marine Conservation Zone assessment [APP-040]**), and the proposed mitigation measures as detailed in the **In Principle Sensitive Features Mitigation Plan [APP-239]**, are based on the worst-case piling locations on the project boundary relative to sensitive features, and the bathymetry of the site. Regardless, any difference in distances between these locations and the closest points at an MCZ will lead to a negligible change in the overlapping area.
E42	8.9.74, 8.9.158, 8.9.227	Given there are MCZs designated for seahorses surrounding the site, and seahorses were found during the Rampion 1 surveys, Natural England advise there does not appear to be any evidence to support the Applicant's statement that they are 'not present in significant numbers'. Additionally, it should be considered that a significant proportion of the local population may not have to be a large number. We advise that impacts on the scale of kilometres could span the entire range of local populations and so potentially pose a significant risk.		We advise the assessment is amended in line with our advice.	Please refer to the Applicant's response to **E40** above.

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E43	F & S 8.9.81, 8.9.157 IPSFMP 5.2.44	Natural England understand the Applicant has predicted no overlap (of the underwater noise contours relevant to this impact) with the MCZs designated for seahorses. Based on the reasoning in our comment to 8.9.74, we do not agree that the Applicant can determine the risk of impacts on seahorses outside of the MCZ's is low when they could feasibly be present in the array area. Both species of the UK seahorses–- spiny (Hippocampus guttulatus) and short-snouted–- are protected under Section 9 of the Wildlife and Countryside Act 1981. We advise that the Applicant is aware that there is a possibility of seahorses being killed or injured, disturbed, or damage or destruction to their place of shelter or protection, all of which are offences under Section 9. We advise that it is therefore not appropriate.		We advise the assessment is amended in line with our advice.	Please refer to the Applicant's response to **E40** above.
Seahorse – Underwater Noise–- Temporary Threshold Shift					
E44	8.9.226-8.9.229	Natural England note that there is an interaction between the TTS contour and Beachy Head West MCZ. We note that the wording of commitment C-265 does not reflect the wording in the MCZ Assessment. Our understanding is the commitment is a minimum of one noise abatement measure, year-round. Please see our comment on 8.1.4 of the MCZ Assessment/the commitments on this. Based on this level of mitigation, we do not agree that the magnitude of impact can be consider negligible. We advise that an assessment with and without mitigation is provided to present the worst-case scenario. We advise that seahorses are a protected feature of the MCZ year round, therefore any mitigation would also need to be proven to be below the threshold for TTS year-round within the MCZ.		We advise the assessment is amended in line with our advice, and that the further information is provided.	The Applicant confirms that the wording of commitment C-265 has been amended in this document within the Errata (see Covering Letter submitted at Deadline 1). The Applicant highlights the precautionary nature of the parameters built into the underwater noise modelling (**Appendix 11.3: Underwater Noise Assessment Technical Report, Volume 4 [APP-149]**), and the modelling of noise abatement measures (modelling of minimal underwater noise attenuations afforded by each noise abatement measure). Therefore, the TTS contour as presented in relation to the Beachy Head West MCZ are considered largely precautionary. Furthermore, as the modelling of noise abatement measures also only reflects the minimal level of noise abatement provided to ensure a precautionary approach; the Applicant is therefore confident that the implementation of a noise abatement system year-round (with the inclusion of additional mitigation measures from March-July) will ensure the conservation objectives of the Beachy Head West MCZ are not hindered.
Seahorse – Underwater Noise–- Behavioural impacts					

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E45	8.9.259	We advise you refer to our comments on 3.1.1, 5.3.28 of the IPSFMP with regards to uncertainty over thresholds.		Refer to IPSFMP comments	Please refer to the Applicant's responses to E107 below.
E46	8.9.287- 8.9.291	As noted above for Beachy Head West MCZ there is overlap with the TTS contour, given TTS thresholds are likely to be significantly larger than those for behavioural disturbance logically behavioural disturbance is highly likely to occur. We note that the 135dB contour mapped on figure 8.20 (which does not appear to consider all WCS) gives an indication that there is a clear overlap with Beachy Head West MCZ and possibly other MCZ's. We advise that the WCS contour is mapped in relation to the lower figures quoted in the text for behavioural disturbance and the boundaries of the MCZ's are included on this.		We advise that a worst-case threshold is mapped and that the assessment is amended to account for the contours of this. We advise the mitigation measures would need to be proven to reduce this to a threshold level	The Applicant is confident that a suitably precautionary assessment has been undertaken to establish the potential impacts from underwater noise on seahorse. Furthermore, the Applicant would like to direct Natural England to **Appendix 11.3: Underwater Noise Assessment Technical Report, Volume 4 [APP-149]**, where the built in precaution of the noise modelling is detailed, and therefore the TTS impact ranges on seahorse are considered over precautionary. Furthermore, as stated in **Chapter 8: Fish and shellfish ecology, Volume 2, [APP-049]**, the Applicant does not support the application of the 135dB SEL contour to establish behavioural impact ranges for sensitive receptors. Specifically, this threshold is based on a study undertaken within a quiet loch on fish not involved in any particular activity (i.e. not spawning), and it is therefore not considered appropriate to use this threshold within a much noisier area such as the English Channel (which is subject to high levels of anthropogenic activity and consequently noise) as the fish within this area will be acclimated to the noise and would be expected to have a correspondingly lower sensitivity to noise levels.
Other Impacts					
E47	8.9.398, 8.9.415	Natural England advise there is an inconsistency with seahorses being treated a stationary receptor for underwater noise, but a fleeing report in terms of suspended sediment and smothering. We note that 8.9.398 suggest they would flee, whereas 8.9.415 suggest they have limited capacity to flee. We advise that they are considered as not having capacity to flee		We advise this is amended and that seahorses are treated as a stationary receptor throughout.	The Applicant welcomes the advice from Natural England regarding the consistency of the impact assessment on seahorse. The Applicant is confident that a suitably precautionary assessment of seahorse has been undertaken, and mitigation proposed where appropriate (as defined in the **In Principle Mitigation Plan for Sensitive Features [APP-239]** and the **Commitments Register [APP-254]**). The Applicant is confident that when considering seahorse as a receptor to impacts from increased SSC and deposition, seahorse will move away from areas of disturbance. Furthermore, as detailed in **Table 8-26** and **paragraph 8.9.392** of **Chapter 8: Fish and shellfish Ecology, Volume 2, [APP-049]**, sediment plumes are anticipated to be localised, and will quickly dissipate after

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					cessation of the activities, due to settling and wider dispersion with the concentrations reducing quickly over time to background levels. Therefore, taking this into consideration, the Applicant is confident that the impact, and therefore significance of effect will be minor. These species are expected to be resilient to any increase in SSC as winter storm events in their natural environment cause temporary increases in suspended sediment concentration of a similar magnitude to that which will be produced by the construction operations.
Underwater Noise–- UXO clearance activities					
E48	8.9.13, 8.9.305, 8.9.311-8.9.321	When consulted on the separate marine licence for UXO clearance, it should be noted Natural England will advise that UXO detonation occurs outside of the sensitive season for black seabream (MarchJuly) given the close proximity of Kingmere MCZ to potential clearance locations. Therefore, we advise that the Project will need to consider this in their construction programme. Specific consideration also needs to be given to impacts on seahorses MCZ's.		We advise this will need to be considered.	The Applicant confirms that UXO removal will be sought in a separate future marine licence application when there is greater certainty on the quantum of UXO requiring clearance prior to construction using high resolution geophysical survey data. The Applicant also confirms that no UXO clearance will be undertaken within the black bream breeding period (March–- July).
E49	Commitment 102 and Commitment 275	A UXO Clearance Marine Mammal Mitigation Protocol (MMMP) will be developed. A Draft UXO Clearance MMMP (Document Reference 7.15) has been submitted with this application. The use of low order detonations to dispose of Offshore UXOs using the 'deflagration method' will be implemented, where practicable.		We question how mitigation plans measures for marine mammals will specifically address impacts to black seabream and seahorse as MCZs features. Given it is stated that UXO clearance works have the potential to affect a similar area to that of piling, we advise that full consideration needs to be given to mitigation specifically aimed at the MCZ features.	Please see the Applicant's response to **E48** above.
Cable Corridor Works					
E50	8.9, 8.10 Commitment 273 (Also included in the MCZ A and IPSFMP) 8.10.91	Natural England advise that the impacts from direct disturbance from installation of the export cable and impacts from suspended sediment are dependent on Commitment 273. This is a seasonal restriction will be put in place to ensure offshore export cable corridor installation activities are undertaken outside the black seabream breeding period (March-July) to avoid any effects from installation works on black seabream nesting within or outside of the Kingmere MCZ.		Natural England supports this measure. We advise that this should include all aspects of export cable installation, including but not limited to seabed preparation works, cable protection work, UXO works(which we understand would form part of a separate licence). We advise that should any activities not be included we would have concerns regarding the impacts of these.	The Applicant welcomes Natural England's advice. The Applicant confirms that the implementation of Commitment 273 in the **Commitments Register [APP-254] (as** secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**) applies to all aspects of export cable installation (including seabed preparation works, cable protection works and UXO works). The Applicant confirms that UXO removal will be sought in a separate future Marine License application, when there is greater certainty on the

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					quantum of UXO requiring clearance, prior to construction, using high resolution geophysical survey data.
E51	Commitment – 269, 270 (Also included in MCZ A and IPSFMP)	Commitments 269 and 270 include: • 'Cable routeing design will be developed to ensure micrositing where possible to identify the shortest feasible path avoiding areas considered to potentially support black seabream nesting'. • 'A working separation distance (buffer) will be maintained wherever possible from sensitive features, notably black seabream nesting areas, as informed by the outputs of the physical processes assessment, to limit the potential for impacts to arise (direct or indirect)'.		We advise that there needs to be clear prioritisation in this measure with micrositing (avoiding) being the preference in the first instance and if there is absolutely no way of avoiding black seabream nesting habitats, the shortest path should be taken as a mitigation measure. We advise this measure does not guarantee no direct impacts (as stated in the assessment), it only seeks to minimise them. We advise a robust pre-construction survey plan and a final micrositing plan are agreed with Natural England. Until this data is available the assessment should assume that it may not be possible to avoid potential black seabream nesting habitats. We advise this measure should apply to the placement of all infrastructure, construction equipment and include the operation and maintenance phase. We advise a commitment to the separation distance that will be employed should be made, and also a distance from the edge of the cable corridor where works will not occur. Should this not be possible in an area it should be highlighted in the final micrositing plan and discussed with Natural England.	The Applicant affirms that avoidance of sensitive features through micro-siting is the preference in the first instance; subsequently if this proves impossible for certain areas then mitigation measure (Commitment 269 in the **Commitments Register** **[APP-254] as** secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**)) will then be applied. The Applicant confirms that the pre-construction survey plan and the final sensitive features mitigation plan will be developed in consultation with Natural England. The mitigation measures as set out in the **In Principle Sensitive Features Mitigation Plan** **[APP-239]** (as secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**)) provide for the situation where avoidance of specific habitat features may not be possible, and the assessment undertaken has been presented on that basis. The Applicant also confirms that Commitments 269 and 270 (as detailed in the **Commitments Register** **[APP-254]** (secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**) will apply to the placement of all infrastructure and construction equipment within the export cable corridor and include the operation and maintenance phase. The buffering distances between the relevant receptors and the proposed locations of the works are set out in **Section 5.2** of the **In Principle Sensitive Features Mitigation Plan** **[APP-239]** as informed by findings of the physical processes assessment work. As detailed in the **In Principle Mitigation Plan for Sensitive Features** **[APP-239]**, any reductions of buffers that might be required will be clearly set out in the Final Plan, which will be submitted to MMO in consultation with Natural England for approval pre-construction.
E52	8.9.337, 8.9.359, 8.10.9,	It is recognised that 'Seabed disturbances resulting from construction activities such as cable trenching within the black seabream nesting area may		We advise that long term and ongoing loss of black seabream nesting habitat is recognised as potentially being	The Applicant notes that each eventuality from all phases of the Proposed Development in respect to black bream nesting habitats, have been taken into consideration in

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	8.10.41	damage nests and could potentially prevent future use of the seabed for nest building if a physical change in its character in discrete locations was to occur. The cable installation may, in discrete locations, have a long-term negative effect on areas of high intensity black seabream nesting if the physical nature of the seabed habitat is altered'. Natural England also considers there may be long term habitat loss during operation and maintenance, as 'it is recognised that some nesting habitat may potentially be lost through the introduction of cable protection'. Even with the mitigation proposed there is still a residual risk of unidentified nesting areas being impacted/ or not being avoidable/requiring cable protection, therefore we do not agree that there will be no long-term loss of habitat and that this can be assessed as Negligible. Additionally, there could be ongoing direct and indirect impacts from operations and maintenance (O&M) works on the export cable corridor		unavoidable and having ongoing impacts through the lifetime of the project. In relation to Operation and Maintenance works we advise a Disturbance Management Plan (DMP) is produced. This should set out impacts from each aspect of these works and present measures (and supporting information of efficacy) to avoid/reduce/mitigate the disturbing effect arising from operations such as cable repair, replacement, reburial operations in or adjacent to sensitive features including Kingmere MCZ and locations suitable for black seabream nests. Adherence to the measures listed in the DMP could/should be a condition of the DCO/dML	**Chapter 8: Fish and Shellfish Ecology, Volume 2 [APP-049]**. Specifically, the potential for impacts on black bream nesting habitats from the operation and maintenance phase of the Proposed Development, including the installation and potential replacement of cable protection, have been assessed in **Section 8.10** of **Chapter 8: Fish and Shellfish Ecology, Volume 2 [APP-049]**. The process for mitigating against the potential for impacts on sensitive features to ensure all effects are minimised, inclusive of impacts and effects from the operation and maintenance phase is detailed in the **In Principle Sensitive Features Mitigation Plan [APP-239]**. This Plan details the hierarchy of mitigation, following an avoid, reduce, mitigate process. Where mitigations are required during the operation and maintenance phase of the development, the principles of the mitigation have been captured in the **Outline Offshore Operations and Maintenance Plan [APP-238]** at high level. The details of which will be finalised once the final design information is available, and captured in the Final Offshore Operations and Maintenance Plan post-consent (as required under the deemed Marine Licence (dML) Condition 3 in Schedules 11 and 12 of the **Draft DCO [PEPD-009]**.
E53	8.9.357	Natural England question why there would be direct disturbance outside of the DCO boundary of the cable corridor (e.g., for anchor placement). We advise that activities are only permitted within the DCO boundary, and that anchor placement potentially in the MCZ outside of the DCO boundary has not been assessed.		We advise this is clarified in the assessment.	The Applicant confirms that there will be no direct disturbance outside of the DCO boundary of the cable corridor. The statement made in the ES was a general assertion that, should anchoring of vessels occur in areas adjacent to the Proposed Development works, no significant effects would be anticipated. The Applicant also confirms that no such activities would be undertaken within the MCZ boundaries, or indeed those of any designated site (this will be captured in a future iteration of the **In Principle Sensitive Features Mitigation Plan [APP-239]**), and further notes that anchoring vessels at sea is not a licensable activity.
E54	Commitment 271, 272 Also included in MCZ A and IPSFMP	'The offshore export cable routeing design will target areas of the seabed that enable maximising the potential for cables to be buried, thus providing for seabed habitat recovery in sediment areas and reducing the need for secondary protection and consequently minimising any potential for longer-term residual effects'.		Whilst Natural England support cable burial as the most preferable form of cable protection and the potential for this to minimise the long term effects. However, we understand that there are areas where the Applicant does not anticipate cable burial being possible and that up to 54% of the export cable	Geotechnical information will be collected after consent is granted and will be provided to potential cable installers during the tendering for these works. A technical evaluation of the methods proposed by the tendering parties will be undertaken as the start of cable burial risk assessment process and used as part of the decision-making process to select the preferred supplier. The aim of the project will be to select a contractor who, with their

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		'Adoption of specialist offshore export cable laying and installation techniques will minimise the direct and indirect (secondary) seabed disturbance footprint to reduce impacts, which will provide mitigation of impacts to potential (unknown) black seabream nesting locations, where avoidance is not possible. The Applicant will seek to utilise the most appropriate technology available at the time of construction to reduce the direct footprint impact from cutting machinery.		corridor may require mechanical trenching, and that up to 20% of the corridor will need cable protection. We advise that it should be made clear across the documentation that there are clear limitations in the applicability of these measure across the whole cable corridor. Additionally, it should be recognised that methods such as mechanical trenching have the potential to reduce the likelihood of recovery of nesting habitats. Additionally, where cable protection is required this may represent a loss of suitable nesting habitat. Natural England advise that a cable burial risk assessment, which contains site specific geotechnical information, is provided during the Examination. Without this information, it would have to be assumed that the worst-case scenario would be realised. This includes cable protection and/or the most impactful trenching methodology being required in habitat suitable for black seabream nesting	selected equipment and proposed methods, will be able to bury the subsea cables in accordance with the commitments and the mitigation secured through the dML and minimise the likelihood of future cable exposures. This will help the project avoid having to undertake expensive remediation works. The cable burial risk assessment will be completed by the party contracted to undertake these works during the detailed design stage and therefore cannot be provided during the Examination.
E55	Commitment 44	An Outline Scour Protection and Cable Protection Plan (Document Reference 7.12)'		We advise that further detail is provided on how this plan will minimise long term loss of habitat in relation to black seabream and seahorses, and how this considers lessons learnt from Rampion 1	Commitment C-44 in the **Commitments Register** **[APP-254]** sets out that a Final Scour Protection and Cable Protection Plan will be completed prior to construction commencing and submitted to the Marine Management Organisation (MMO) for approval and this is secured in Condition 11(1)(i) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**). The potential dimensions of scour are described in **Section 6, Appendix 6.3 Coastal processes technical report Impact assessment, Volume 4** **[APP-131]**. The assessment identifies that seabed scour will be very localised and where it does develop, limited to the area immediately adjacent to the installed infrastructure. There is no predicted significant effect on wider scale sediment transport rates or patterns and will not result in any net change in the volume of sediment available in the local or regional system.

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		It is stated in relation to impacts from EMF that the cables will be buried at a target depth of '1.0 to 1.5m below the seabed surface for the majority of the route'. We understand that burial could be challenging in rock and that there are areas where cable protection will be required. Additionally, it is unclear why there is a range of 1m -1.5m, and so we advise that information is provided to evidence that burial 1m would still provide sufficient mitigation. We advise that a Cable Burial Risk Assessment is provided at the consenting stage. If this target depth cannot be met along the route then this could invalidate the ES conclusions. It is suggested that cable protection would provide the same mitigation as burial, but we advise no evidence has been provided here to support this statement. We advise that should installation methods such as pinning be used to minimise impacts on habitats such as chalk, this could invalidate EMF mitigation measures.		We advise that further geotechnical information, including a Cable Burial Risk Assessment is provided.	The cable burial depths will be determined as set out in **paragraph 4.3.54** within **Chapter 4: The Proposed Development, Volume 2** **[APP-045],** which is reflected in commitment C-41 in the **Commitments Register** **[APP-254]** for the array cables. A full Cable Burial Risk Assessment based on the results of the pre-construction surveys will be undertaken when the final design parameters are determined post-consent. In the event that it is not possible to bury a particular section of cable to the desired burial depth, cable protection will be considered as described in in **paragraph 4.3.68** within **Chapter 4: The Proposed Development, Volume 2** **[APP-045]**), The proposed burial of the subsea cables and the application of additional cable protection if needed, will provide a separation between buried cables and the seabed.
E56	8.10.75, 8.10.82 Commitments 41,45 and 96	'An Outline Marine Pollution Contingency Plan (MPCP) has been produced in Appendix A of the Outline Project Environmental Management Plan (PEMP)'		We note Appendix A of this outline plan is still brief at this stage and Natural England should be consulted on the final version post consent.	The Applicant confirms that the Marine Pollution Contingency Plan will be updated accordingly post consent (secured in Condition 11 (1)(d) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009])**, and consultation with the relevant statutory marine and nature conservation bodies (including Natural England) will be undertaken on the final version.
E57	Commitment 53	Mitigation and control of invasive species measures has been incorporated into the Outline Project Environmental Management Plan'.		We note that only the benthic section of this plan mentions invasive species, so this needs to consider fish. Natural England should be consulted on the final version.	The Applicant confirms that the Project Environmental Management Plan will be updated accordingly post consent (secured in Condition 11 (1)(d) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009])**, and consultation with the relevant statutory marine and nature conservation bodies (including Natural England) will be undertaken on the final version.
E58	Commitment 95 (Also in MCZ A)	It is suggested that the impacts due to decommissioning will have a magnitude no greater or less than the construction phase, but that a decommissioning programme will be developed. We advise that the magnitude of impacts is not reduced in this assessment from construction until the content of the Decommissioning Plan is known, and that Natural England should be consulted on this plan post consent.		We advise the decommissioning assessment is also updated.	As stated in **Chapter 8: Fish and Shellfish Ecology, Volume 2** **[APP-049]**, at this time no large offshore wind farm has been decommissioned in UK waters. Therefore, any future programme of decommissioning will be developed in close consultation with the relevant statutory marine and nature conservation bodies (including Natural England), and captured within a Decommissioning Plan, to ensure that the guidance and best practice at the time can be applied to minimise any potential impacts (as detailed in C-111 of the **Commitments Register** **[APP-**

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					254] (secured in Part 3, Requirement 11 of the **draft DCO [PEPD-009])** in accordance with the Energy Act 2004).
E59	F & S 8.11-8.11.4 Commitment 11 (also in the MCZ A) MCZ A 7.2.33,7.5.8, 7.7.7	We advise that much of the mitigation proposed for construction is likely to be required for decommissioning. Where we have advised the sensitivity of features needs to be amended for the construction phase, this would also apply to decommissioning. We advise our comments above also apply to underwater noise from decommissioning. We advise that underwater noise impacts will need to be re-considered at the point where the full extent of these works and the machinery used is decided upon.			At this time no large offshore wind farm has been decommissioned in UK waters. Therefore, any future programme of decommissioning will be developed in close consultation with the relevant statutory marine and nature conservation bodies (including Natural England), and captured within a Decommissioning Plan, to ensure that the guidance and best practice at the time can be applied to minimise any potential impacts (as detailed in C-111 in the **Commitments Register [APP-254]** secured in Part 3, Requirement 11 of the **draft DCO [PEPD-009])** in accordance with the Energy Act 2004).
E60	8.11.11	Natural England advises that the default should be that cable protection should be removed, to avoid permanent loss of habitat that could support features naturally found in the area, such as black seabream nests.		We advise this should be made a commitment, but that the worst case of not being able to remove cable protection is considered.	Any decommissioning activities will be undertaken in accordance with guidance and best practice available at the time of decommissioning. Any future programme of decommissioning will be developed in close consultation with the relevant statutory marine and nature conservation bodies (including Natural England), and captured within a Decommissioning Plan (as detailed in C-111 of the **Commitments Register [APP-254]** secured in Part 3, Requirement 11 of the **draft DCO [PEPD-009])** in accordance with the Energy Act 2004).
E61	8.11.15	We advise that Black seabream show interannual variation in their nesting locations. Therefore, it cannot be assumed that these locations would be the same, many years down the line at decommissioning.		We advise this supports the need for ongoing data collection.	A noise buffer of 100 km for cumulative effects is a highly conservative screening range, that encompasses any feasible propagation of underwater noise associated with an offshore wind project which would be detectable above background levels. The Applicant also notes that the 100 km radius is also far greater than all modelled impact ranges for underwater noise with respect to fish receptors, as set out within **Appendix 11.3: Underwater noise assessment technical report, Volume 4 [APP-149]** and therefore represents a precautionary screening range for cumulative projects. The Applicant directs Natural England to its response to F37, regarding possible cumulative effects with aggregates licences in relation to sedimentation.

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E62	F & S 8.12.24 - 8.12.28 MCZ 7.8.3	We advise clarity is provided on the information used to generate the 100km noise buffer for cumulative effects. We advise you refer to our benthic comments in relation to possible cumulative effects with aggregates licences in relation to sedimentation.		We advise evidence is provided to support this and that are benthic comments are referenced.	The Applicant confirms that as detailed in paragraph 7.2.5 of the **Draft Marine Conservation Zone Assessment [APP-040]**, the noise modelling scenario presented in Graphic 1-1 represents the simultaneous piling of jacket foundations, which is the worst-case scenario for underwater noise on MCZs with noise sensitive features, such as black seabream and seahorses. The contours depicted represent the accepted criteria for onset mortality or mortal injury (207dB SEL_{cum}), recoverable injury (203 dB SEL_{cum}) and temporary threshold shift (186 dB SEL_{cum}). As noted in response to E62 above, the Applicant highlights that the 100 km radius is also far greater than all modelled impact ranges for underwater noise with respect to fish as noise sensitive receptors, as set out within **Appendix 11.3: Underwater noise assessment technical report, Volume 4 [APP-149]** and therefore represents a precautionary screening range. The ZoI used for screening other impacts, for example sedimentation, is based on the maximum spring tidal excursion from the Proposed Development and again is considered by the Applicant to be both appropriate and precautionary. The Applicant notes that behavioural thresholds for underwater noise impacts remain a key area of disagreement between Natural England and the Applicant and will continue to work with Natural England to agree a resolution.
E63	Graphic 1-1, Table 2.2, Table 5.1, 4.2.4	Natural England seek clarification that the graphic demonstrates the absolute worst case in terms of spatial overlap with designated sites, as no explanation is provided as to what scenario this represents. Additionally, we note that the contours shown on this graphic do not consider behavioural impacts, and neither does the noise ZoI (Zone of Influence) that is used to screen impacts (Table 5.1). Given this is critical to the assessment of MCZ features, such as black seabream and seahorses, we advise this contour is included. We therefore advise the screening decisions should not rely on this ZoI as drawn. We advise that currently viewed in isolation this graphic does not provide a clear understanding of the issues to the reader. We advise all noise		We advise confirmation is provided in the report of what scenario this represents, and that it is the worst case. We advise that the noise ZoI is updated to include behavioural impacts in relation to specific species. We advise that behavioural thresholds are still a key area of disagreement between Natural England and the Applicant	The embedded environmental measures set out in **Table 3-1** of the **Draft Marine Conservation Zone Assessment [APP-040]** are contained within the offshore environmental management plans, including: • **Outline Project Environmental Management Plan (PEMP) [APP-233]** • **Outline Scour Protection and Cable Protection Plan [APP-234]** • **Draft Piling Marine Mammal Protocol [APP-236]** • **Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Protocol [APP-237]** • **In Principle Sensitive Features Mitigation Plan [APP-239]** • **Offshore In Principle Monitoring Plan [APP-240]** The above plans are secured through Condition 11, Schedules 11 and 12 of the **draft DCO [PEPD-009]**,

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		modelling/figures should include the boundary of the MCZ's			which relates to Pre-construction plans and documentation.
E64	3.1.3	Natural England advises that it is key all these measures are secured in any consent issued.		We advise all embedded mitigation measures proposed are secured in the DCO/DML.	The pre-application consultations on impacts from construction noise on spawning/nesting black seabream are listed in **Table 3-1** of the **In Principle Sensitive Features Mitigation Plan**, **[APP-239].** The responses of the Applicant to the relevant stakeholders, included issuing technical notes; **Underwater Noise Mitigation for Sensitive Features [APP-251]**), and **Additional underwater noise modelling** of Appendix D, in the **Evidence Plan (Part 9 of 11) [APP-251]**), summarising the results of underwater noise modelling for noise mitigation for black seabream and the proposal to use a disturbance threshold of 147 decibels (dB) SELss (Radford et al., 2016), based on a low response reaction in seabass. The Applicant commissioned a dedicated survey of ambient noise levels to provide contemporary data on noise levels at the Kingmere MCZ site and within surrounding areas whereby much of the black seabream nesting activity is focused. This survey was undertaken over 15 days in July 2022. A further technical note, **Evidence Plan (Part 3 of 11) Piling Noise and Black Bream [APP-245]** was issued to Natural England and the MMO in March 2023, providing responses to the following key issues raised: approaches to dealing with uncertainty and the application of precaution in the assessment; approach to improving the rigour of the baseline soundscape data; additional context from Rampion 1 construction; and additional empirical evidence to support the efficacy of mitigation techniques. In response to further consultation, the Applicant commissioned a second in-situ noise monitoring survey, targeted at collecting data across the March to July black seabream spawning/nesting period in 2023. As outlined in **Section 5.3** of the **In Principle Sensitive Features Mitigation Plan [APP-239],** this commitment has now been updated so that noise mitigation technology will be in place for the entirety of the piling operations, with additional measures put in place during the breeding

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					season, the Applicant will continue to liaise with Natural England on this issue.
E65	4.1.3	Natural England notes that agreement was not reached in the Expert Topic Groups (ETG's) with regards to underwater noise impacts on black seabream.		We advise that this is still a key area of disagreement between Natural England and the Applicant.	The Applicant considers it has appropriately applied the assessment outcomes from the EIA relating to potential impacts arising on MCZ features, or relevant components of those features, before providing a concluding statement on the potential for hindrance of the Conservation Objectives for each feature within the **Draft Marine Conservation Zone Assessment [APP-040]**. Noting the concern raised, the Applicant will engage with Natural England to clarify where the assessment presented introduces confusion through terminology in order to resolve the concerns and will update the ExA in due course. In regard to the comments on determination of impact magnitude and significance of effect, the Applicant has responded to each item raised by Natural England in its Relevant Representation (see responses to E29, E37-E39, E43 and E44 above). The Applicant considers the assessment presented within the ES to be robust and appropriate, and on this basis is not intending to change its findings. However, the Applicant will seek to discuss and resolve these issues with Natural England. Discussions with Natural England will be recorded in the Statement of Common Ground.
E66	4.3.7	Natural England notes that EIA terminology and methodology to assess impacts are being applied throughout the MCZ Assessment. For clarity, the MCZ Assessment should seek to define and understand the potential of the conservation objectives being hindered by external activities/impacts. We advise that to avoid confusion the MCZ Assessment should not use EIA terminology. Additionally, we note that our comments within the thematic chapters regarding significance of effect and magnitude also apply to the MCZ assessment where the Applicant has brought forward these conclusions into it.		We advise the MCZ Assessment is revised accordingly.	Whilst, as noted above in response to E66, the Applicant considers the assessment presented within the MCZ assessment to be robust and appropriate, it will seek to discuss and resolve these issues with Natural England. Discussions with Natural England will be recorded in the Statement of Common Ground.

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E67	5.2.5	We note that indirect impacts that were assigned a 'negligible' magnitude in the ES and have therefore been screened out and not taken to a stage 1 MCZ Assessment. We advise that our comments on the relevant chapters are taken into account and this screening is adjusted as necessary. Furthermore, the different impacts of the proposal on the MCZ features in question should be considered cumulatively rather than in isolation to avoid 'salami-slicing' the overall impact.		We advise that our comments on the relevant thematic chapters are considered against any conclusions made in the MCZ Assessment.	The Applicant notes that in relation to the same effects arising from construction as assessed in **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]**, no significant effects were concluded. Therefore, considering the low order impacts arising from the short term and intermittent maintenance activities associated with cable repair, replacement and reburial, any impacts from these activities would be substantially less and therefore also not significant. It is on this basis that the Applicant screened such impacts out for fish and shellfish features of the Kingmere MCZ.
E68	5.2.5 - 5.2.6	Natural England advises that cable repair, replacement and reburial as part of O&M activities in proximity to Kingmere MCZ have the potential to cause impacts that have not been included in the screening		Natural England advises that these impacts should be screened in.	Please refer to the Applicant's response to E67 above.
E69	Table 5.1	Natural England advises that where impacts have been screened out due to impacts on coastal and marine processes not being significant, Natural England's comments on this chapter should be taken into account.		Natural England advises our comments on coastal and marine processes are referred to and the assessment updated as necessary	Please refer to the Applicant's response to E8 above.
E70	7.2.5	It is suggested that 'The maximum design scenarios (spatial and temporal) with respect to underwater noise relates to the simultaneous and sequential piling of pin piles: - Spatial worst case - Simultaneous installation of jacket foundations. (Piling of 396 pin piles (4 pin piles piled simultaneously at both the East and West piling locations in the array area)), driven with a 2,500 kilojoule (kJ) hammer energy; - Temporal worst case - Sequential piling of 396 pin piles (pin piles piled sequentially at separate locations within a period of 24 hours), driven with a 2,500kJ hammer energy'. This is not the same as the Maximum Design Scenario (MDS) presented in the fish and shellfish chapters, which includes detailed parameters including, for example, number of piles per day. We advise clarity is provided on why this differs.		We advise that you refer to our more detailed comments on the fish and shellfish chapter on this. We advise that a clear worst-case scenarios are presented across all documents, with any difference explained. We advise clarity is provided on the modelled scenario used to inform the assessment and included on the graphic	Please refer to the Applicant's response to E66 above. The Applicant confirms that within the **Marine Conservation Zone Assessment [APP-040]**, and **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]**, black bream have been assigned a sensitivity of Medium to underwater noise, on the basis that the receptor has a swim bladder that is close but not intimately connected to the ear. A negligible magnitude of impact has been assigned when regarding impacts from underwater noise on black bream within the Kingmere MCZ. This is due to the lack of overlap from underwater noise contours for injurious effects, and the application of mitigation for TTS and behavioural effects (as detailed in full in the **In Principle Sensitive Features Mitigation Plan [APP-239]**). The Applicant confirms that the assessment presented in the **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]**, assesses the potential for impacts on black bream at a population level (with a focus on areas of primary importance to black seabream), and **Marine Conservation Zone Assessment [APP-040]**, assesses the potential for hindrance on the Conservation Objectives

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					of the Kingmere MCZ. Therefore, any differences between the magnitude of impact between the two assessments will be on account of this.
E71	7.2.8-7.2.34	Notwithstanding our comments regarding the appropriateness of using of EIA terminology in the MCZ Assessment, we advise that clarity is provided where there are differences between the magnitude of impact and sensitivity applied between the two assessments. We do not agree with the negligible magnitude of impact applied here. Please see comments on the chapter above.		We advise any differences are recognised and clearly justified. Please refer to our chapter comments with regards to the magnitude of impact.	The Applicant is confident that a suitably precautionary assessment was undertaken in relation to the potential for impacts to features of the Kingmere MCZ, as informed by physical processes modelling. Notwithstanding this, the Applicant has committed to a seasonal restriction to ensure offshore export cable corridor installation activities are undertaken outside the black seabream breeding period (March-July) to avoid any effects from installation works on black seabream nesting within or outside of the Kingmere MCZ.
E72	7.2.35- 7.2.59	Natural England agrees with the sensitivity assigned to the features of Kingmere MCZ in relation to increases in suspended sediment concentrations (SSC) and sediment deposition, as these are in line with our advice on operations. However, based on the fact the 500m buffer does overlap with an area of Kingmere MCZ, we do not agree with the assessment of a minor magnitude of impact.		We advise that the magnitude of impact should be revised to consider the actual impact on the area of overlap, as opposed to contextualising this in relation to the site as a whole.	Following a detailed assessment undertaken on a precautionary basis, as detailed in **Chapter 8: Fish and shellfish ecology, Volume 2** **[APP-049]**, the Applicant is confident that a full piling restriction from 1 March to 31 July is not appropriate or required to avoid significant population level effects on nesting black bream. Whilst, in 2021, the black seabream spawning/nesting period was extended to include the month of July, spawning/nesting activity during this month is considerably reduced and therefore with much less impact on the population breeding success is anticipated than the preceding months, as set out in **Chapter 8: Fish and shellfish ecology, Volume 2** **[APP-049]**, with 5% of nests attended by males by 10 July and 0% by 30 July in a 2020 survey. This compared with 89.4% nests attended by males in June of the same year. Noting that some nesting is still potentially occurring in July, the **In Principle Sensitive Features Mitigation Plan** **[APP-239]**, the provision of which is secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**) sets out multiple mitigation measures during the month of July; these include (in the event that piling is undertaken in July in the western part of the array) the combination of a low noise hammer technology and bubble curtains, and a sequencing approach to piling starting in locations furthest from the MCZ. Through the application of a variety of mitigation measures in July, the Applicant is confident that piling operations will not hinder the Kingmere MCZ conservation objectives.

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					The Applicant reiterates that a full piling exclusion from March-July inclusive would have significant issues for the practical development of the Proposed Development.
E73	7.2.25	Natural England's position is that the piling restriction should run from 1st March – 31st July inclusive in line with the sensitive season for spawning/breeding black seabream in the conservation advice for Kingmere MCZ.		We advise this is the appropriate length of the piling restriction needed to avoid hindering the conservation objectives of the MCZ.	Please refer to the Applicant's response to E73 above.
E74	7.2.28	Natural England advise that July should not be seen as less important in relation to the potential to hinder the conservation objectives of Kingmere MCZ. Whilst we agree that it appears from the aggregates data that the levels of spawning/nesting may be lower in July, this difference does not represent evidence that this period is not important to designated bream. It is thought possible that later spawning could be an important 'last attempt' if spawning has been unsuccessful earlier in the season.		We advise that July should be consider equally important in line with the conservation advice	The Applicant is undertaking additional work to provide a comparison of the environmental conditions at the Proposed Development with other projects where NAS have been deployed, this will be submitted to the Examination in due course.
E75	7.2.30, 7.2.31	It is stated that 'Details of available mitigation technology have been presented to provide confidence that the required levels of noise attenuation can be delivered (either through one of the examples given, or through other future potential mitigation technology) and can therefore be relied upon to avoid potentially significant effects that may arise in the absence of mitigation'. Natural England advise that insufficient evidence has been presented to provided certainty that these measures can achieve the levels of attention proposed within the specific environmental conditions present at the construction site of Rampion 2. Natural England has concerns about the approach of effectively pushing this issue to post consent, given it may still not be possible to resolve at that stage. We advise that certainty of provision of the commitments is not the same thing as certainty that the commitments will be sufficient to prevent the conservation objectives of a designated site being hindered.		The mitigation technology proposed has not been used in like for like conditions as Rampion 2. We encourage the Applicant to trial and monitor the noise attenuation achieved by the mitigation outside of the sensitive period for black seabream and present findings to the MMO and Natural England for review. Without such evidence we cannot agree that the conservation objectives of Kingmere MCZ will not be hindered.	As presented in the **In Principle Sensitive Features Mitigation Plan [APP-239]**, through the implementation of noise abatement measures, and seasonal restrictions and zoning, the Applicant is confident that the conservation objectives of the Kingmere MCZ will not be hindered. Furthermore, significant measures of precaution are applied throughout the mitigation plan, including the use of a precautionary disturbance threshold of 141 decibels (dB) SELss based on research by Kastelein et al. (2017) (which recorded a short-lived response to 141 dB (SELss) in seabass), and the modelling of minimal underwater noise attenuations afforded by each noise abatement measure.

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E76	7.2.32, 7.2.34	Based on the information presented to date Natural England does not have confidence that a 'noise reduction is achievable to reduce the impact ranges of TTS and behavioural effects to outside of areas of primary importance for breeding black seabream'. Therefore, advise we do not agree with the conclusion that 'there will be no impact from underwater noise on nesting black seabream within the Kingmere MCZ, and the magnitude of impact is considered to be negligible'. Additionally, we advise piling is not short-term and intermittent, particularly if it is conducted sequentially as stated in the WCS		We disagree that underwater noise will not hinder the conservation objectives of the site	Please refer to the Applicant's response to E58 above.
E77	7.2.33	In relation to decommissioning we understand that underwater noise from cutting has the potential to generate a lower level of underwater noise than pile driving. However, no reference is presented to demonstrate this and support the subsequent conclusion of no significant effect		We advise evidence is provided to support this conclusion.	The Applicant confirms that the implementation of Commitment 273 of the **Commitments Register** **[APP-254] (**secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**) applies to all aspects of export cable installation (including seabed preparation works and trenching for cables.
E78	7.2.37	The three main sources of SSC and sediment deposition may arise from Rampion 2 are listed as: drilling for foundations, trenching for cables, and seabed preparation activities (such as seabed levelling and sandwave clearance). We seek clarification that the seasonal restriction on cable installation activities in the export cable corridor during March-July includes the trenching activities and seabed preparation activities in this area.		We advise the clarity is provided on the activities include in this restriction and any activities that would not be included before we can provide our final advice on this matter.	The Applicant is confident that a suitably precautionary assessment has been undertaken to establish the potential impacts from underwater noise on seahorse. As stated in **Chapter 8: Fish and shellfish ecology, Volume 2** **[APP-049]**, the Applicant does not support the application of the 135dB SEL contour to establish behavioural impact ranges for sensitive receptors. Specifically, this threshold is based on a study undertaken within a quiet loch, and it is therefore not considered appropriate to use this threshold within a much noisier area such as the English Channel (which is subject to high levels of anthropogenic activity and consequently noise) as the species within this area will be acclimated to the noise and would be expected to have a correspondingly lower sensitivity to noise levels.
E79	7.5.7, 7.7.6	Natural England note that it is suggested that there is the 'potential for behavioural effects on breeding seahorse, there is the potential for an interaction of the impact ranges from piling in the array area with the Selsey Bill and the Hounds MCZ, Beachy Head West MCZ, Beachy Head East MCZ and Bembridge MCZ'. However, this noise contour has not been included on Graphic 1.1.		We advise Graphic 1 is updated to include this contour.	The Applicant is confident that a suitably precautionary assessment has been undertaken to establish the potential impacts from underwater noise on seahorse. Furthermore, the Applicant directs Natural England to **Appendix 11.3: Underwater noise assessment technical report, Volume 4** **[APP-149]** where the built in precaution of the noise modelling is detailed, and therefore the impact ranges on seahorse are considered precautionary.

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
					Furthermore, as stated in **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]**, the Applicant does not support the application of the 135dB SEL contour to establish behavioural impact ranges for sensitive receptors. Specifically, this threshold is based on a study undertaken within a quiet loch on fish not involved in any particular activity (i.e. not spawning), and it is therefore not considered appropriate to use this threshold within a much noisier area such as the English Channel (which is subject to high levels of anthropogenic activity and consequently noise) as the fish within this area will be acclimated to the noise and would be expected to have a correspondingly lower sensitivity to noise levels. The Applicant is undertaking additional work to provide a comparison of the environmental conditions at the Proposed Development with other projects where NAS have been deployed, this will be submitted to the Examination in due course.
E80	7.5.7, 7.7.6	It is stated that the 'The implementation of embedded environmental measures to employ one or more noise abatement mitigations, during the summer breeding season of seahorse (C-265, C-274, C280, and C- 281, Table 3-1) will reduce the impact ranges of behavioural effects to outside of the MCZs.' However, no evidence has been provided here to support this statement, and therefore the subsequent conclusion of not hindering the conservation objectives of the relevant MCZ's. We also advise that we have not discussed an appropriate threshold for behavioural disturbance on seahorses with the Applicant.		We advise that evidence is provided to demonstrate that the mitigation measures put forward have proven efficacy (in the same environmental conditions as are present at the Rampion 2 site) to reduce the noise levels to below an acceptable behavioural threshold level within Beachy Head West MCZ. We advise without this information we do not consider the magnitude to be negligible.	The Applicant is confident that a suitably precautionary assessment has been undertaken to establish the potential impacts from underwater noise on seahorse. Furthermore, the Applicant would like to direct Natural England to **Appendix 11.3: Underwater noise assessment technical report, Volume 4 [APP-149]** where the built in precaution of the noise modelling is detailed, and therefore the impact ranges on seahorse are considered over precautionary. Notwithstanding this, the Applicant is undertaking additional work to provide a comparison of the environmental conditions at the Proposed Development with other projects where NAS have been deployed, this will be submitted to the Examination in due course.
E81	7.7.5	As recognised in 7.5.3 Seahorses have been put into Group 4 'Fishes that have special structures mechanically linking the swim bladder to the ear', which means they are a particularly sensitive receptor to underwater noise impacts. Natural England note that there is a potential for 'TTS impacts on breeding seahorse' as 'there is an interaction of the impact ranges from piling in the array area, with Beachy Head West MCZ'. It is stated that 'embedded mitigation to reduce impacts from underwater noise on sensitive receptors will		We advise that evidence is provided to demonstrate that the mitigation measures put forward have proven efficacy (in the same environmental conditions as are present at the Rampion 2 site) to reduce the noise levels to below the TTS level within Beachy Head West MCZ. We advise without this information we do not consider the magnitude to be negligible	Please refer to the Applicant's response to **E47** above.

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		reduce the impact ranges of TTS to outside of the MCZ'. However, no evidence has been provided here to support this statement, and therefore the subsequent conclusion of not hindering the conservation objectives of the relevant MCZ's.			
E82	7.5.11	We advise that short-snouted seahorse are treated as a stationary receptor in terms of increases in SSC and sediment deposition, in the same way they have been for noise.		We advise the assessment is amended to reflect this	Please refer to the Applicant's response to **E23** above.
E83	8.1.4	Natural England does not agree the conservation objectives of Kingmere MCZ will not be hindered in relation to underwater noise impacts (both TTS and behavioural impacts) on black seabream. This primarily relates to insufficient certainty regarding the efficacy of mitigation proposed specifically in the environmental conditions at Rampion 2, and disagreement with the suitability of the threshold for behavioural impacts proposed by the Applicant.		This is Natural England's position. Our position that a full seasonal restriction is required has not changed from Rampion 1.	The Applicant is confident that a suitably precautionary assessment has been undertaken to establish the potential impacts from underwater noise on seahorse. As stated in **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]**, the Applicant does not support the application of the 135dB SEL contour to establish behavioural impact ranges for sensitive receptors. Specifically, this threshold is based on a study undertaken within a quiet loch, and it is therefore not considered appropriate to use this threshold within a much noisier area such as the English Channel (which is subject to high levels of anthropogenic activity and consequently noise) as the species within this area will be acclimated to the noise and would be expected to have a correspondingly lower sensitivity to noise levels. The Applicant is undertaking additional work to provide a comparison of the environmental conditions at the Proposed Development with other projects where NAS have been deployed, this will be submitted to the Examination in due course.
E84	MCZ A 8.1.4 IPSFMP 5.3.43	Natural England also note that in relation to short snouted seahorse there is a potential for underwater noise impacts on the following MCZ's: • Beachy Head West MCZ (TTS and behavioural) • Beachy Head East MCZ, Selsey Bill and the Hounds MCZ, Bembridge MCZ (behavioural) The Applicant has proposed the mitigation put forward will ensure these impacts are not realised within the MCZs, however, the assessment does not refer to evidence/modelling that demonstrates this. In relation to the mitigation measures themselves,		We advise that suitable evidence is provided to support this conclusion.	Document used: **Report to Inform Appropriate Assessment [APP-039]**.

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
		Natural England has the same concerns around efficacy as raised above in relation to black seabream. Additionally, we have not agreed or discussed a suitable behavioural threshold with the Applicant.			
Document used: APP-039] 5.9 Rampion 2 Report to Inform Appropriate Assessment					
E85	7.3.14	Natural England are likely to agree with the conclusion of no AEoI in relation to the Atlantic salmon feature of The River Itchen SAC. However, we note that Table 7.1 includes figures for a fleeing receptor and Natural England advise that fish are not considered a fleeing receptor. Additionally, we advise that it would be more accurate to show the noise modelling location closest to the SAC on Figure 7.1 and for clarity to be provided on which of the WCS this figure is showing. We advise that the full range of stationary noise effects are shown in Figure 7.1 in order to support the conclusions drawn.		We advise the Table is updated to the figures for a stationary receptor and that the full range of effects is modelled on Figure 7.1 to support the conclusions drawn.	Commitment C-44 in the **Commitments Register [APP-254]** sets out that a Final Scour Protection and Cable Protection Plan will be completed prior to construction commencing and submitted to the Marine Management Organisation (MMO) for approval and this is secured in Condition 11(1)(i) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**). The potential dimensions of scour are described in **Section 6, Appendix 6.3 Coastal processes technical report Impact assessment, Volume 4 [APP-131]**. The assessment identifies that seabed scour will be very localised and where it does develop, limited to the area immediately adjacent to the installed infrastructure. There is no predicted significant effect on wider scale sediment transport rates or patterns and will not result in any net change in the volume of sediment available in the local or regional system.
Document used: [APP-239] 7.17 Rampion 2 In Principle Sensitive Features Mitigation Plan (IPSFMP)					
E86	Executive summary, 1.1.2, 5.4.1, 1.1.6-1.1.17	Natural England has concerns regarding the IPSFMP not being finalised until the post-consent/pre-construction phase, and that it is stated the mitigation measures are not confirmed. We advise that where mitigation measures are essential to the assessment, we cannot agree the assessment conclusions without sufficient certainty in the measures being progressed and being able to achieve the levels of mitigation required.		Natural England advise that further investigation and information is provided into the Examination to demonstrate the effectiveness of the measure	The Applicant confirms that the measures will be progressed but will be refined based on the Final Design information and piling parameters. This information will only be known once design refinement has been completed post consent. The Final Plan must accord with **In Principle Sensitive Features Mitigation Plan [APP-239]** as secured in secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**).
E87	1.1.4	Natural England notes it appears to be implied here that if the worst-case scenario is not realised some of these measures may be reduced. Therefore, we advise that we do not have sufficient certainty of exactly what we might be agreeing to at this stage.		We advise that this is clarified.	The Applicant confirms that the measures presented in the **In Principle Sensitive Features Mitigation Plan [APP-239]**. are purely considered 'In Principle' on the basis that the optimised design for construction is not yet finalised. The Final Plan will be submitted pre-construction for agreement with the MMO in consultation with Natural England (secured in secured in Condition

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					11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**)). The commitments as detailed in the **Commitments Register** **[APP-254]** will be adhered to by the Project regardless of the realisation of the worst-case scenario.
E88	Flowchart 1	Natural England advise that post construction monitoring to verify the predicted effects will be required.		We advise this is clarified	The Applicant confirms that the monitoring to be undertaken is detailed in the **Offshore In Principle Monitoring Plan** **[APP-240]**. The details of monitoring will be agreed with the MMO in consultation with Natural England prior to construction (secured in secured in Condition 11(1)(j) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**).
E89	2.5.5	We advise this information from the Rampion 1 surveys is of limited relevance, given Rampion 1 had a piling restriction April-June, and the export cable was not located in an area of known bream nesting		We advise that the limitations of this a clearly recognised.	The Applicant notes these limitations raised. This will be acknowledged in the Final Plan, however the Applicant also highlights that piling was undertaken through the month of July during the construction of Rampion 1 and although anecdotal, the post-construction monitoring for that project did not identify any adverse population effects on black seabream in the region. The Final Plan must accord with **In Principle Sensitive Features Mitigation Plan** **[APP-239]** as secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**).
E90	Table 3.1	Natural England maintains our advice that the only measure that provides confidence that the conservation objectives of Kingmere MCZ in relation to Black seabream will not be hindered is a full pilling exclusion between March-July inclusive		We advise in the absence of further evidence being presented this will remain our advice.	Please refer to the Applicant's response to **E73** above.
E91	Table 3-2	Natural England would expect that monitoring would be undertaken to demonstrate recovery, with further measures potentially being triggered if this was not shown.		We advise that this aspect is included in an updated Plan.	The Applicant confirms that the monitoring to be undertaken is detailed in the **Offshore In Principle Monitoring Plan** **[APP-240]** as secured in Condition 11(1)(j) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**). The details of monitoring will be agreed with the MMO in consultation with Natural England prior to construction.
E92	Table 3.2	It is stated that 'Updates to the project design that could impact the conclusions of the assessment may be subject to further assessment if deemed appropriate in consultation with the relevant authority'.		We advise that all reasonable efforts should be made to narrow down this uncertainty prior to consent being granted.	The Applicant confirms that any changes will represent a refinement of the current project design envelope to ensure they are appropriate to the final design (as recognised in the Planning Inspectorate Advise Note Nine.

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
		Natural England advises that we have concerns over assessments being changed post-consent and the process that would need to be followed to achieve this. We advise that updates to the underwater noise monitoring proposed also appear to be leaving handling the uncertainty to post consent.			Any changes that require a marine licence variation or new licence would need to be appropriately supported by updated assessments and evidence as relevant.
E93	4.2, 5.2.4	We advise our benthic comments on the features to be included and comments above on the mitigation measures are considered here		Refer to our comments and amend	Please refer to the Applicant's responses to **F64** to **F80**. The Applicant has responded to each of the comments on the mitigation measures individually in the responses given above.
E94	4.3.3	In relation to Black seabream Natural England advise that the focus of the survey should be mapping habitats with the potential for nesting.		See comments above.	As stated in the **In Principle Sensitive Features Mitigation Plan [APP-239]**, the mapping of black bream nesting habitats will be a key focus of the pre-construction survey. The outputs of the survey will be presented within the Final Plan. The Final Plan must accord with **In Principle Sensitive Features Mitigation Plan [APP-239]** as secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**).
E95	4.3.2	Natural England advise that we do not have confidence in the ability of the 'spatial and temporal zoning plan' to deliver effective mitigation to prevent the conservation objectives of Kingmere MCZ being hindered. As Cefas have raised, such plans rely on the modelling, which is not sufficiently reliable to make predictions to such specific boundaries. In addition, there is not sufficient information on the efficacy of mitigation measures in this environment and their ability to achieve thresholds to such defined boundaries. Finally, we advise that in the absence of an agreed threshold for behavioural disturbance to reduce the impact down to within the MCZ, mitigation cannot be agreed.		Unless additional information is provided, it will remain our position that a pilling exclusion from March-July inclusive is the only measure we can have confidence will not hinder the conservation objectives of Kingmere MCZ	The Applicant acknowledges Natural England's concerns regarding the efficacy of noise abatement measures in the Proposed Development location. The Applicant is undertaking additional work to provide a comparison of the environmental conditions at the Proposed Development with other projects where NAS have been deployed, this will be submitted to the Examination in due course. The Applicant's position on the behavioural threshold for black seabream has been reliant upon existing literature and best available knowledge and understanding, as detailed in **Paragraph 8.9.247** et seq. of **Chapter 8: Fish and shellfish Ecology, Volume 2 [APP-049]**. As detailed in the **In Principle Sensitive Features Mitigation Plan [APP-239]**, the Applicant considers the disturbance threshold of 141dB SELss as suitably precautionary, as it is based on a short-lived startle response observed in sea bass. As informed by Popper et al., (2014) behavioural disturbances are considered to be long term changes in behaviour and distribution, and should not include effects on single animals, or small changes in behaviour such as startle responses or minor

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					movements. The use of the disturbance threshold of 141dB SELss is therefore considered to be suitably precautionary. Further to this, the approach used by the Applicant to define a suitable threshold for disturbance from underwater noise aligns with that used in other OWF applications and assessments (e.g. Hornsea Four Offshore Wind Farm Application (Ørsted, 2021) Hornsea Project Three Offshore Wind Farm Application (Ørsted, 2018), Sheringham and Dudgeon Extension Offshore Wind Farm Projects Application (Equinor, 2022) Awel y Môr Offshore Wind Farm Application (RWE, 2023)), and therefore complies with current practice when approaching issues such as scientific data gaps and uncertainties, in order for planning decisions to be made.
E96	5.2.14	We advise that the post-consent data collection will require an agreed plan to ensure that this will be sufficient to inform micrositing.		We advise that an agreed monitoring plan, should be approved to the MMO in consultation with Natural England, well in advance of any surveys taking place to ensure survey can go ahead at the optimum time of year.	The Applicant confirms that the details of the pre-construction survey will be produced post consent and agreed with the MMO in consultation with Natural England. Pre-construction monitoring and surveys are secured by secured in Condition 16 of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**).
E97	5.2.15	We advise that aiming for a 300m buffer from the edge of nesting areas is desirable. Any reduction in buffers would need to be clearly set out and agreed with MMO and Natural England. Please also refer to our detailed benthic comments.		We advise that this is detailed in a final plan for micrositing to be agreed post-consent with the MMO in consultation with Natural England. Refer to our benthic comments.	The Applicant welcomes this advice from Natural England. The Applicant confirms that agreement of the Final Plan for micrositing as part of the Sensitive Features Mitigation Plan will be sought from the MMO in consultation with Natural England post-consent. The Final Plan must accord with **In Principle Sensitive Features Mitigation Plan** **[APP-239]** as secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**).
E98	5.3.1	Natural England disagree that based on the information to date the levels of noise attenuation specified can be achieved and relied upon. Natural England has not been presented with evidence from the Applicant that these levels of attenuation would be achievable in the specific environmental conditions at the Rampion 2 site.		We advise that this information should be submitted into the Examination.	The Applicant is undertaking additional work to provide a comparison of the environmental conditions at the Proposed Development with other projects where NAS have been deployed, this will be submitted to the Examination in due course.
E99	5.3.3	We advise that clarity is provided here that this is relevant to Temporary Threshold Shift and behavioural disturbance.		We advise clarity is provided.	The Applicant confirms that this statement relates to both Temporary Threshold Shift and behavioural disturbance.

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E100	5.3.3	This incorrectly refers to records of seahorses in the south-western region, whereas Rampion 2 is in the south-east.		This should be amended in an updated assessment.	The Applicant confirms this has been amended to 'south-eastern region' in the Errata submitted at Pre-Examination Procedural Deadline **Cover Letter [PEPD-001]**.
E101	5.3.3	With regards to mitigation measures for Herring, Natural England defers to the advice of Cefas (see comments on the fish and shellfish chapter).		To note.	This is noted by the Applicant.
E102	5.3.4	Refer to our comment on mitigation measure C-265. It is stated that 'Assumptions on attenuation performance of the noise mitigation techniques are based on demonstrable performance of the technology, to ensure confidence in delivering the required noise level reductions'. We advise we are not aware that a full comparison between environmental conditions at test locations and those at Rampion 2 has been conducted. We understand that the Applicant to date has not had this information, and therefore we disagree that confidence in the noise attention to be achieved has been provided.		We advise that full comparison of environmental conditions is undertaken, to aid in providing further confidence in the levels of abatement proposed. This should be submitted into the examination.	The Applicant is undertaking additional work to provide a comparison of the environmental conditions at the Proposed Development with other projects where NAS have been deployed, this will be submitted to the Examination in due course.
E103	5.3.19	We advise that the information shared confidentiality with Natural England is not sufficient to address our concerns. In relation to double big bubble curtains, we advise that other factors such as the strength of the current, depth of water and benthic substrate are critical to performance. These have not been compared		We advise that full comparison of environmental conditions is undertaken, to aid in providing further confidence in the levels of abatement proposed.	Please refer to the Applicant's response to E98 above.
E104	5.3.21, 5.3.26	Please refer to comments above in Point 35 regarding 141dB. We do not support 141dB re 1 µPa2s being used as the basis of this plan.		Natural England position is that a full pilling exclusion March-July (inclusive) should be implemented.	Please refer to the Applicant's response to E35 above.
E105	5.3.22-5.3.23	Please refer to our comments above in relation to the studies referenced here, and how they have been applied. We have concerns over the methodology used to determine a threshold from the ambient noise data collected. It is clear that the peak levels of noise have been referenced, but these are not the same as continuous noise from piling, and		We advise that you refer to the more detailed advice of Cefas with regards to how the Applicant has proposed deriving a threshold ambient noise data.	This is noted by the Applicant. More detailed ambient noise data has been acquired in 2023 which provides additional information (this was submitted to the Examination at Pre-Examination Procedural Deadline **Chapter 21 Noise and vibration, Volume 2** of the ES **[PEPD-018]**). It should be noted that piling noise, even from 'continuous' piling, should not be considered

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		therefore it may be more appropriate to look toward the minimum levels of noise. However, we defer to Cefas on this matter.			continuous and can be described in different ways using multiple noise metrics. It is agreed that comparisons between different metrics should be avoided, although under some circumstances this may provide useful information.
E106	5.3.25	Please see our comments on Appendix 8.3 above regarding the further noise study.		See above.	Please refer to the Applicant's response to E105 above.
E107	3.1.1, 5.3.28	Natural England advise that no detailed discussion regarding this mitigation being suitable for seahorses has been had as part of the evidence plan process. We advise that the maximum noise attenuation measures should be used year-round in all areas. We advise evidence is provided that this will sufficiently reduce the impacts within seahorse MCZ's. No evidence has been provided to support 141dB re 1 µPa2s (SELss) being a suitable behavioural threshold for seahorses. We advise that seahorses are a 'group 4' receptor. Group 4 receptors are defined as having the highest sensitivity to noise and therefore we would expect to see evidence that this threshold was suitable for seahorses. We note that 8.9.259 of the Fish and Shellfish Chapter suggests lower thresholds		We advise that this advice is taken into consideration, the plan amended, and evidence provided.	The Applicant is confident that a suitably precautionary assessment has been undertaken to establish the potential impacts from underwater noise on seahorse. Furthermore, the Applicant would like to direct Natural England to **Appendix 11.3: Underwater Noise Assessment Technical Report, Volume 4 [APP-149]**, where the built in precaution of the noise modelling is detailed, and therefore the impact ranges on seahorse are considered suitably precautionary. Furthermore, as stated in **Chapter 8: Fish and shellfish Ecology, Volume 2, [APP-049]**, the Applicant does not support the application of the 135dB SEL contour to establish behavioural impact ranges for sensitive receptors. Specifically, this threshold is based on a study undertaken within a quiet loch on fish not involved in any particular activity (i.e. not spawning), and it is therefore not considered appropriate to use this threshold within a much noisier area such as the English Channel (which is subject to high levels of anthropogenic activity and consequently noise) as the fish within this area will be acclimated to the noise and would be expected to have a correspondingly lower sensitivity to noise levels.
E108	5.3.29	Natural England question whether this accounts for simultaneous piling at different locations, and the cumulative potential this has.		We advise clarity is provided within the assessment.	The Applicant confirms that the behavioural threshold used to inform the zoning exercise and mitigation (141dB re 1 µPa2s (SELss)) is for single strike, and represents disturbance, which by nature does not require or considered timed exposures. Multiple piling scenarios are therefore not applicable for this criterion.
E109	5.3.30	Notwithstanding our advice above on the uncertainty of what can be achieved with noise abatement, Natural England note that the footnote here states ' It should be noted that detailed octave or 1/3rd octave band attenuations for the PULSE (IQIP) and MNRU (MENCK) hammers were not supplied despite direct requests, and therefore these		We advise that further effort to obtain this information is made.	The Applicant confirms that direct requests have been made for this information to the manufacturers, and to date these have not been made available to the Applicant. The Applicant however reiterates the precautionary nature of the parameters built into the underwater noise modelling (**Appendix 11.3: Underwater Noise**

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		predictions are made with limited data and should be considered indicative for the equipment and conditions at Rampion 2'. We advise this further reduces the confidence that these measures will achieve the values of abatement stated.			**Assessment Technical Report, Volume 4 [APP-149]**), and the modelling of noise abatement measures (modelling of minimal underwater noise attenuations afforded by each noise abatement measure). Furthermore, the modelling of noise abatement measures also only reflects the minimal level of noise abatement provided to ensure a precautionary approach.
E110	5.3.30	We note that the Applicant has proposed combining mitigation measures to achieve higher level of attenuation. We advise that no evidence is provided to support this being viable, or that it is possible to achieve these values through a combination of measures.		We advise further evidence is provided to have confidence that this is viable.	Please refer to the Applicant's response to E98 above. During pre-examination the Applicant provided confidential information to Natural England on the use of noise abatement measures in the context of offshore piling activities. This report demonstrates that combining mitigation measures to achieve a higher level of noise attenuation has been achieved.
E111	5.3.38	Natural England support a piling exclusion in the western array (given we support this for the whole of the array March to July). We advise that the conservation advice notes the sensitive period is March to July inclusive (not March to June). There is evidence of active nests in July from the aggregates data, which informed the conservation advice for the site.		We advise that July is included in any seasonal restriction.	Please refer to the Applicant's response to **E73** above.
E112	5.3.39	Natural England advises that insufficient evidence is available in relation to the efficacy of the mitigation measures and a suitable threshold to mitigate to in order to allow piling to proceed in the eastern array during March-July		We advise that currently there is insufficient evidence that a full seasonal restriction is not required in the eastern array.	The Applicant is undertaking additional work to provide a comparison of the environmental conditions at the Proposed Development with other projects where NAS have been deployed, this will be submitted to the Examination in due course.
E113	5.3.39-5.3.40	We note the buffers on Figure 5.15 appear to relate to distances from the MCZ. It is not clear what sounds levels are expected within the MCZ at each of these distances. We note turbine locations have yet to be decided, therefore currently it is possible that even starting from the furthest piling location could result in piling significantly closer than band A in the eastern array or be significantly further east than the far western portion of the western array (band C)		We advise that further information is provided. We advise that there are clear uncertainties in relation to where the furthest pile will be located and therefore the effectiveness of this element of the measure. Refer to comments above regarding the noise modelling specifically.	As described in paragraph 5.3.39 of the **In Principle Sensitive Features Mitigation Plan [APP-239]**, the purpose of these bands is to define sections of permitted areas of piling that move progressively closer to the Kingmere MCZ, with the purpose of keeping piling as far from the Kingmere MCZ for as long as possible, irrespective of the final wind turbine generator layout.
E114	5.3.40-5.3.41	Natural England disagree with the approach to piling in the western array currently proposed for July. Refer to comments above.		We advise that July is included in any seasonal restriction.	Please refer to the Applicant's response to E73 above.

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E115	5.3.42	In relation to piling noise mitigation between August to February, we advise that this period could offer an opportunity for the Applicant to test the efficacy of the mitigation measures outside of the sensitive period for spawning/breeding black seabream. However, considerations during this time would have to be given to other mitigation requirement e.g., for herring and seahorses.		We advise that the Applicant considers trialling mitigation measures outside of sensitive seasons, to test their effectiveness in reducing noise levels.	The Applicant is undertaking additional work to provide a comparison of the environmental conditions at the Proposed Development with other projects where NAS have been deployed, this will be submitted to the Examination in due course.
E116	5.3.43	Refer to comments above regarding underwater noise impacts and seahorses and further evidence.		We advise this evidence is provided in an updated assessment.	The Applicant confirms that all comments relating to underwater noise impacts and seahorses and further evidence have been addressed accordingly.

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Table 4-11 Applicant's response to Natural England - Appendix F (Benthic, Subtidal and Intertidal Ecology)

Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
Document Used: [APP-045] 6.2.4 Chapter 4 The Proposed Development					
F1	[APP-050] Table 9.6 456, 9.6.7,9.6.8, 9.9.55	It should be recognised that the Applicant failed to collect 7 of the 15 chemical samples, which almost halves the agreed sample size. Given the grab samples were conducted 4 months after the collection of geophysical data, we question why so many of these samples appear to still have been located within rock, as they were likely to fail. We note that all 7 stations record arsenic above the threshold effect level, and one station exceeded the probable effect level.		We advise that the advice of CEFAS is sought in relation to this and appropriate management measures which may be required.	The Applicant recognises that some sampling effort was unsuccessful, however the samples obtained provide representative data for the characterisation of sediment-bound contaminants, appropriate for the purposes of EIA. The Applicant would further highlight that such contaminants are associated with fine sediment fractions and as such, the lack of such material at locations where samples were not obtained due to the coarse nature of the seabed do not therefore represent a data gap. It is of note that for the south coast of the UK higher levels of Arsenic are naturally observed in sediments and that the levels identified, subject to agreement on extraction methods with the MMO, are noted by the MMO in its Relevant Representation as not posing a concern for release of contaminants in suspended sediments arising from seabed disturbance activities.
F2	[APP-050] 9.5.4 -9.5.5.	Natural England notes that, because of the delays to the programme, the site-specific survey data is already approximately 3 years old in certain areas. The limitations of the reliability of basing an ES Assessment on data that is outdated, particularly in relation to ephemeral species, such as *Sabellaria spinulosa*, should be recognised. The assessment should therefore assume that the habitats listed above are present and are unavoidable as a worse-case scenario. The Applicant should note that we expect micrositing to be conducted using up to date pre-construction data to avoid impacts where possible. NB: we advise that any data used to infer presence or absence of Sabellaria spinulosa is only valid for work within 2 years of the collection of the data.		We advise that age of the data is acknowledged in the assessment and that the importance of the pre-construction surveys is noted.	Full details of the data underpinning the baseline characterisation for benthic ecology receptors are set out within **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]**, which includes specific reference to the date of the site-specific surveys, along with the wide range of other datasets drawn upon to set out a robust characterisation of the receiving environment, appropriate for the purposes of EIA. Whilst the Applicant notes the comments on the age of the site-specific data, this is only relevant for certain ephemeral features, such as certain forms of *Sabellaria* habitat, for which detailed pre-construction surveys will be conducted, as set out in the **Offshore In Principle Monitoring Plan [APP-240]**, the delivery of which is secured in Condition 11(1)(j) of the dMLs (Schedules 11 and 12 of the **draft Development Consent Order (DCO) [PEPD-009]**). This will ensure provision of an

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					appropriately contemporary dataset (i.e. less than 2 years old) with which to finalise any required micrositing to avoid such features, should these be found to comprise 'reef' rather than ephemeral crust habitats.
F3	Table 9.10	Natural England understands that the DDV survey occurred between December 2020 to February 2021. As per our advice to the Applicant (02/11/2020), this was not the optimum time for such surveys, and there was a risk the imagery would be poor quality and not fit for purpose. We note that Appendix 9.3 states that 'The main assessment was conducted using the still images captured during the DDV transects and stations due to high turbidity levels, which reduces the resolution of analysis from the video imagery'. Sections 9.5.10-9.5.12 of the chapter allude to data limitations but does not explicitly acknowledge that some of these limitations stem from the lack of transect data. We advise this needs to be acknowledged in the main chapter. Natural England queries if any further data has been collected by Applicant over the last two years to fill this known data gap and provide a more robust baseline for assessment.		We advise this ES chapter should fully acknowledge the limitations of the site-specific data collected in providing a robust baseline. And advise the Applicant to update the ES where possible with additional site-specific evidence.	The Applicant confirms that image resolution acquired from the site specific surveys were of high quality as identified within both **Appendix 9.3 Rampion 2 Offshore wind farm subtidal benthic characterisation survey report, Volume 4 [APP-137]** and **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]**. The Applicant highlights that the characterisation of the receiving environment has been based on a wide range of datasets, including site-specific survey, and does not solely rely upon the DDV imagery. The Applicant considers the baseline described to be a robust characterisation of the receiving environment, appropriate for the purposes of EIA; no further data have been collected to map ecological features within the proposed Order limits since these surveys were completed.
F4	9.5.8	This section states, in relation to the Predictive Habitat Mapping, 'Where site-specific data have been collected, this has been prioritised within the predictive habitat model and supersedes the historical data in the habitat map …it has been retained to understand the occurrence of potential biotopes where ground-truth data weren't collected to support the Application and the assessment of effects on the subtidal benthic ecology'. If data gaps have been identified, we advise that further information is provided regarding the risks to the reliability of the assessment due to such data gaps, and question why further data was not gathered to ensure a robust baseline.		We advise that unless the Applicant can provide more site-specific data to update the ES a more precautionary approach is required due to the uncertainties with the current characterisation survey. This would include, but is not limited to, adoption of a suite of mitigation measures which would suitably avoid, reduce, mitigate impacts to any/all of the priority habitats.	The Applicant notes that the predictive habitat model uses the best available data for the proposed Order limits. The initial purpose of creating the predictive habitat model was to address data gaps identified at PEIR, due to planned survey work being delayed and site-specific data therefore being unavailable at that time. The site-specific data have since been added to the model and it is this updated version, which supersedes the previous habitat map, that is presented in **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]**. The Applicant considers the combined data, including site-specific benthic and geophysical survey data, to be of sufficient spatial resolution to allow confidence in the benthic characterisation for the purposes of EIA.

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					The Applicant would also highlight that it has committed to undertaking detailed pre-construction surveys as referenced in the **Offshore In Principle Monitoring Plan [APP-240]**, the provision of which is secured in Condition 11(1)(j) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**). Proposals for micrositing around priority habitats, which importantly will be based on the results of the pre-construction surveys, are presented within the **In Principle Sensitive Features Mitigation Plan [APP-239]** secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**.
F5	9.6.13	Section 9.6.13 suggests 15 biotopes were found in the site-specific survey, but table 9.11 lists 17 biotopes. We note that 5 of these biotopes are not included in the Key of Figure 9.4, which shows the spatial distribution of the biotopes (A4.131, A4.134, A4.214, A4.221, A5.611). We request clarification on which is these scenarios is correct, and that all documents are updated to reflect this.		We advise that the Applicant provides an updated ES, with the correct figures throughout.	The Applicant can confirm that the modelling of biotopes and the assessment of biotopes included data from historic sources and not solely the site-specific data for the Proposed Development, as highlighted within **Section 5.6.1**, **Appendix 9.3: Rampion 2 Offshore wind farm subtidal benthic characterisation survey report, Volume 4 [APP-137]**. The site-specific data were prioritised within the final model with explanation of methods described within **Appendix 9.3: Rampion 2 Offshore wind farm subtidal benthic characterisation survey report, Volume 4 [APP-137].** 17 biotopes were taken through to the assessment of impact as a worst-case scenario of biotopes present within the footprint of the development, as set out within **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2, [APP-050]**.
F6	[APP-135 & APP-137] Appendix 9.1 and Appendix 9.3	Natural England's best practice advice is to collect comprehensive/robust site-specific project data. However, Natural England notes that, outside of the site-specific project data, the Applicant has undertaken predictive modelling which relies heavily on data from literature and other surveys, which are dated and not specifically collected for this purpose. We understand these data have been used to substitute for the lack of site-specific data. But in using non-site-specific project data the confidence in the modelling methodology can only be low.		We advise that the conclusions drawn from the modelling are disregarded and instead greater emphasis is placed on avoiding, reducing and mitigating any potential impact pathway as much as possible. We also advise that a requirement is placed on the Applicant to undertake comprehensive pre-construction surveys which encompass sufficient data collection to inform micrositing and provide a robust baseline, that includes a rigorous power analysis.	As noted in response to F4 above, the Applicant reiterates that the initial purpose of creating the predictive habitat model was to address data gaps identified at PEIR, due to planned survey work being delayed and site-specific data therefore being unavailable at that time. The baseline characterisation, including the benthic habitat map presented within the ES documents, has been developed drawing upon a range of datasets including site-specific benthic survey, historic data and

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		Therefore, Natural England does not support this approach.		As well as informing the baseline, the addition of these data would help to provide greater confidence in the ES predictions.	site-specific geophysical surveys. The assessment does not rely upon a habitat model based solely on historic data; the site-specific survey information has been used to augment the habitat model to provide a robust baseline appropriate for the purposes of EIA rather than substituting for a lack of site-specific data and the resulting combined dataset is considered by the Applicant to be robust. The Applicant would also highlight that it has committed to undertaking detailed pre-construction surveys as referenced in the **Offshore In Principle Monitoring Plan [APP-240]**, the provision of which is secured in Condition 11(1)(j) of the dMLs (Schedules 11 and 12 of the **draft (DCO)) [PEPD-009]**). Proposals for micrositing around priority habitats, based on the results of the pre-construction surveys, are presented within the **In Principle Sensitive Features Mitigation Plan [APP-239]** secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**.
F7	[APP-135] Appendix 9.1 Page 6, 1.3 Predictive Habitat Mapping	We advise that maximum likelihood estimates can be heavily biased for small samples. The optimality properties may not apply for small samples; therefore, the maximum likelihood can be sensitive to the choice of starting values. Depending on the setting of the bathymetry survey and the subsequent data collected, the underlying data being fed into the predictive model via the Maximum Likelihood Classification (MLC) methodology may not be as acute to have a level of sensitivity to pick up smaller/ low rugosity features. We advise that, as the MLC is trained via truthing and assumes that neighbouring cells correspond to higher likely hood of similarity, it is easy to underrepresent smaller or less distinguishable habitats (such as *Sabellaria spinulosa*). This under-representation is more likely to occur when the scale of the cells used are larger, as an overall assumption is derived for the most prevalent sediment or habitats		We advise that the conclusions drawn from the modelling are disregarded and instead greater emphasis is placed on avoiding, reducing and mitigating any potential impact pathway as much as possible. We also advise that a requirement is placed on the Applicant to undertake comprehensive pre-construction surveys which encompass sufficient data collection to inform micrositing and provide a robust baseline, that includes a rigorous power analysis. As well as informing the baseline, the addition of these data would help to provide greater confidence in the ES predictions.	Notwithstanding that the Applicant considers the baseline presented within the ES to be appropriate for the purposes of EIA, it recognises that there is potential for the Maximum Likelihood Classification (MLC) methodology to under-represent or lack sensitivity for some smaller less-distinguishable habitat features. However, the Applicant would highlight that it is not these data that will inform future mitigation efforts, and also that the targeted geophysical ground-truthing campaign is the most useful output in relation to areas of potential *Sabellaria spinulosa* as depicted in **Figure 4, Appendix 9.3: Rampion 2 Offshore wind farm subtidal benthic characterisation survey report, Volume 4, [APP-137]**. The Applicant has committed to targeted pre-construction surveys of priority habitats, including *Sabellaria spinulosa* and stony reef,

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		found within that cell. Therefore, the MLC model may lack appropriate sensitivity.			as referenced in the **Offshore In Principle Monitoring Plan [APP-240]**. Proposals for micrositing around priority habitats is presented within the **In Principle Sensitive Features Mitigation Plan [APP-239]** secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**.
Environmental Impact Assessment					
F8	[APP-050] 9.3.22	We note that the matrix now does not include the 'very high' category, in line with the MarLIN information that has been used to inform the assessment. However, it appears that a single consistent matrix has not been used across chapters.		Whilst Natural England has raised issue across all projects with the use of matrices and potential for underestimating impacts, we advise that if the matrix approach remains acceptable to the regulator then a consistent matrix should be used by the Applicant across chapters.	The Applicant can confirm that the sensitivity matrix was updated since PEIR to ensure that the assessment was consistent with the MarLIN MarESA sensitivity categories. The magnitude/sensitivity categories and definitions, and the resulting matrix of significance of effect used in relation to **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]** is consistent with the majority of other contemporary and historical assessments for other offshore wind farms for the assessment of effects significance for benthic receptors. The use of matrices for the assessment of significance, adopting a source-pathway-receptor model follows that adopted for other projects, considering aspects such as the magnitude of effect, sensitivity of receptor, probability of effect-receptor interaction etc. The matrices will not, however, be wholly consistent across all topics, since the assessments for each aspect (topic) follow guidance and best-practice according to the topic being considered. The specific approach in each case is set out within each specific chapter of the ES.
F9	Table 9.18	We note that the Applicant's definitions, relating to the magnitude impact, suggests that 'Major/Moderate' includes permanent/irreversible change, whereas Minor is temporary change over a minority of the receptor, and Negligible means the receptor is not sensitive. There appears to be quite a leap between Moderate as a permanent change over the majority of the receptor, to Minor which is a temporary change over a minority of the receptor,		Whilst Natural England has raised issue across all projects with the use of matrices and potential for underestimating impacts, we advise that if the matrix approach remains acceptable to the regulator, then magnitudes used throughout the assessment are amended to reflect the definitions in this table. It is particularly key that permanent/irreversible changes are defined as Major or Moderate.	The matrix presented in **Table 9-8**, **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]** not only delineates the temporal nature of the impact but is also clear in stating other aspects, for example in the 'Minor' category it also states 'and/or limited but discernible alteration to key characteristics or features of the particular receptors character or distinctiveness'. For example,

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		with a wide range of magnitudes fitting between the two. Throughout the assessment, there are numerous incidences where the magnitude assigned does not match the definitions in this table, and a lower magnitude has been used against this guidance.			whilst permanent habitat loss from cable protection is regarded as long-term/permanent in relation to the availability of broadscale habitats, the impact magnitude is regarded as non-material or de minimis and therefore should not be classified as a major/moderate impact on account of the limited alteration. Sensitive features have additional mitigation applied to reduce the magnitude of the impact. On this basis the Applicant does not propose to update the magnitudes presented within the ES.
Cable Burial and Scour Protection					
F10	[APP-050] 4.4.5, 9.10.15, Table 9.15, C- 111. Table 9.6 448	Natural England has concerns over the long-term degradation of geotextile bags as cable protection and/or stabilisation for installation barges due to concerns over their removability and potential release of plastics, as well as the introduction of plastic to the marine environment generally. In relation to decommissioning scour protection, surface laid cables, external cable protection, and crossing protection, we advise that decommissioning should aim to remove infrastructure to reduce the potential for irreversible (permanent) habitat loss. We understand that the Applicant plans on producing a '*decommissioning Programme which will be developed and updated throughout the lifetime of the Proposed Development to account for changing best practice*'. It would be helpful if an Outline Decommissioning Plan was included at this stage, with the details agreed with stakeholders, including Natural England, based on best practice at the time of decommissioning.		Natural England considers external scour protection to be a last resort. We would welcome limits being placed on the Maximum Design Scenario to only use types of scour protection that have the greatest likelihood of being removed. We advise careful consideration should be given to the nature of the cable protection materials used as some may be damaging to the marine environment in their own right. We advise that an Outline Decommissioning Plan is provided by the Applicant that utilises lessons learnt from projects that are due to be decommissioned the near future.	The Applicant notes that secondary protection will only be used where necessary as preferentially cables will be buried where possible, as informed by the cable burial risk assessment. The Applicant confirms that it will commit to the use of secondary protection material that has the greatest potential for removal on decommissioning of the Proposed Development as set out within the new Commitment C-289. The Applicant is committed to minimising the release of plastics into the marine environment, and commits to using suitable alternatives, where this is practicable. C-288 and C-289 have been added to the commitments register and will be secured through the next iteration of the **Outline Scour Protection and Cable Protection Plan [APP-234],** secured in Condition 11(1)(i) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**) at Deadline 3. The Applicant notes the comments made with regards to an Outline Decommissioning Plan. At this stage it is too early for the Applicant to specify methodologies for decommissioning.
F11	Table 9.6 (point relating to Section 42 Consultation	We note that mitigation measures that require burial and the potential need for scour prevention, and options for cable protection will be considered in a detailed Cable Burial Risk Assessment. We highlight		We advise geotechnical information is provided within a Cable Burial Risk Assessment at the consenting phase.	The outline methods proposed for cable burial on the Proposed Development are broadly similar to those proposed by Rampion 1 at the consenting stage. The comment *'RED will be*

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	(ID: 367, 396, 397, 400, 439, 447) Table 9.6 441, C-45, Cable protection Table 9.6 442	the limitations in our confidence in the impact assessment, and the viability of mitigation measures presented prior to more detailed site-specific geonical data being gathered to inform this. It is stated that this report *'will consider geological conditions in detail. RED will be using different burial equipment on Rampion 2 (compared to Rampion 1) and so the likelihood of exposure is considered much lower'*. Natural England advises that it would be useful for a comparison on the equipment and methods to be clearly set out (including lessons learnt), given the Rampion 1 monitoring identified cable exposure, and there appears to still be a range of burial options under consideration for Rampion 2.		We request that a clear comparison between the burial equipment used for Rampion 1, and all options that might be used for Rampion 2, is provided to evidence this point. We advise that the Rampion 1 monitoring data are considered in any assessment.	*using different burial equipment on Rampion 2 (compared to Rampion 1)'* reflects that the majority of the cable burial works on Rampion 1 were completed in 2017 and 2018, with works on the Proposed Development likely being undertaken circa 10 years after this. Since the construction of Rampion 1, the industry has and will have installed thousands more km's of subsea cable before these works are carried out on the Proposed Development. The learnings from this experience applied to the development and fabrication of new and more efficient burial tools, which are expected to be proposed by contractors bidding for the cable installation works, are likely to lower the risk of exposure. Geotechnical information will be collected after consent award and will be provided to potential cable installers during the tendering for these works. A technical evaluation of the methods proposed by the tendering parties will be undertaken as the start of cable burial risk assessment process and used as part of the decision-making process to select the preferred supplier. The aim of the project will be to select a contractor who, with their selected equipment and proposed methods, will be able to bury the subsea cables in accordance with the commitments and the mitigation secured through the dML and minimise the likelihood of future cable exposures. This will help the project avoid having to undertake expensive remediation works. The cable burial risk assessment will be completed by the party contracted to undertake these works during the detailed design stage. Regarding Rampion 1 post-construction monitoring data specifically, it is the Applicant's understanding that the reports for the first two years of monitoring have been submitted to the respective discharging authorities in August 2023 and that these have not yet been approved. Therefore, the evidence within such reports is still

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					confidential and not yet in the public domain and as such, should not form the basis for this representation. Additionally, the reports have not yet been signed off by the discharging authorities and are therefore subject to change. The evidence from the Rampion 1 post-construction reports is not yet available for the Proposed Development to include in the ES, due to the reasons mentioned above. When the information is publicly available, it will be taken into account in the relevant management plans.
F12	Table 9.6 444	We note that there are areas where cable burial is not expected to be possible, and therefore scour may occur or scour prevention may be required, which could be in close proximity to Kingmere MCZ. Additionally, it is possible that turbines and associated scour prevention could be placed near to Offshore Overfalls MCZ. Therefore, we advise that further justification is required within this chapter in relation to the potential secondary impacts on designated benthic features within these sites. This should also be fully considered in the MCZ Assessment.		We advise that further justification is provided, and the Applicant provides an up-to-date MCZ assessment.	As detailed within paragraph 9.10.15 *et seq*., within **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]** where cable protection is used, some scouring is predicted to occur throughout the operational phase at these features. The extent of this scouring is predicted to be local, occurring around the perimeter of rock berms. This is confirmed within **Chapter 6: Coastal processes, Volume 2 [APP-047]**, which informs the benthic assessment, with the magnitude of the impact on all benthic receptors is therefore considered to be negligible. The maximum extent of scour predicted within **Appendix 6.3: Coastal processes technical report Impact assessment, Volume 4 [APP-131]** relates to that occurring around foundation structures, with a maximum of up to 28.1m radius from the largest monopile foundations and up to 100m from the centre of the largest jacket foundations (this is measured from the centroid of the foundation structure; maximum radius from an individual pin-pile equates to a maximum of 10.4m). The assessment of potential impacts arising on the conservation objectives of features within the MCZs are thus screened out as reported in Table 5-1 of the **Draft Marine Conservation Zone Assessment [APP-040]**.
F13	Table 9.15, C-44, C-45	We advise that monitoring from Rampion 1 is used to inform predictions of impacts from scour prevention. We seek clarity regarding whether the figures stated		Within updated ES documents the	The potential dimensions of scour are described in **Section 6**, **Appendix 6.3: Coastal processes technical report Impact**

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		for scour prevention are based on benthic survey information. Natural England should be consulted on the final Scour Prevention and Cable Protection Plan.		Applicant must demonstrate how Rampion 1 monitoring and the benthic survey data have been considered. As well as working with the Applicant on the revised Scour Prevention and Cable protection plan during the examination Natural England must be consulted on final plan as part of a DCO/dML conditioned.	**assessment, Volume 4 [APP-131]**. The assessment identifies that seabed scour will be very localised and where it does develop, limited to the area immediately adjacent to the installed infrastructure. There is no predicted significant effect on wider scale sediment transport rates or patterns, and will not result in any net change in the volume of sediment available in the local or regional system. An **Outline Scour Protection and Cable Protection Plan [APP-234]** has been submitted alongside the Application, with the final Plan submitted to and approved in writing by the MMO as secured in Condition 11(1)(i) of the dMLs Schedules 11 and 12 of the **draft DCO [PEPD-009]**). Regarding Rampion 1 post-construction monitoring data specifically, it is the Applicant's understanding that the reports for the first two years of monitoring have been submitted to the respective discharging authorities in August 2023 and that these have not yet been approved. Therefore, the evidence within such reports is still confidential and not yet in the public domain and as such, should not form the basis for this representation. Additionally, the reports have not yet been signed off by the discharging authorities and are therefore subject to change. The evidence from the Rampion 1 post-construction reports is not yet available for the Proposed Development to include in the ES, due to the reasons mentioned above.
F14	Table 9.15, Table 9.16, C-41, C-45, C-96, 9.10.41- 9.10.44	We note that Table 9.15 mentions burial of 1.5m with regards to reducing the effects of Electro Magnetic Fields (EMF). We note that a target burial depth of 1m is quoted for interconnector and array cables, which is less than 1.5m. Additionally, commitment C-41 states 1m. We advise that a consistent value is used, and evidence is referenced to support this. We question whether current information of benthic conditions has been used to inform the likelihood of achieving this across the various seabed conditions of the site. Has insight from success or failure of		The Applicant is to clarify what the burial depth commitment is, and how likely it is that the cable burial depth will provide the required mitigation. We advise that the viability of this should be informed by geotechnical data, lessons learnt for Rampion 1 and the Cable Burial Risk Assessment.	The cable burial depths will be determined as set out in **paragraph 4.3.54** within **Chapter 4: The Proposed Development, Volume 2 [APP-045]**, which is reflected in commitment C-41 of the **Commitments Register [APP-254]** for the array cables (as secured by Draft Development Consent Order, Schedule 11, Part 2, Condition 2 (7)). The response to F11 sets out the process for selecting the cable installation contractors in order to meet the required burial depth according to the cable

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		achieving burial depth at Rampion 1 in different sediment types been used to inform the assessment? If this target is not likely to be achievable based on the current information, the effectiveness of this mitigation measure for EMF pathways is reduced.			burial risk assessment. This will take into account information from the post construction monitoring from Rampion 1, when publicly available. If it is not possible to bury a particular section of cable to the desired burial depth, cable protection will be considered as described in in **paragraph 4.3.68** within **Chapter 4: The Proposed Development, Volume 2** **[APP-045]**). The proposed burial of the subsea cables and the application of additional cable protection if needed, will provide a separation between buried cables and the seabed surface and therefore effects from EMF will be appropriately reduced.
F15	9.10.16	Our comments in the coastal processes section regarding scour should be considered here, including consideration of scour monitoring in relation to Rampion 1. Based on our current understanding of the situation at Rampion 1, and the fact that it is suggested that there are likely to be issues burying the cable and scour around any scour protection, we advise that the magnitude of impact is not Negligible.		We advise further consideration of this issue is required by the applicant in the cable specification and installation plan and/or the Scour prevention and cable protection plan and the magnitude adjusted in the ES.	Commitment C-44 of the **Commitments Register** **[APP-254]** sets out that a Final Scour Protection and Cable Protection Plan will be completed prior to construction commencing and submitted to the Marine Management Organisation (MMO) for approval and this is secured in Condition 11(1)(i) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**). This will consider scour monitoring experience from the post construction monitoring from Rampion 1, when publicly available. The potential dimensions of scour are described in **Section 6**, **Appendix 6.3 Coastal processes technical report Impact assessment, Volume 4** **[APP-131]**. The assessment identifies that seabed scour will be very localised and where it does develop, limited to the area immediately adjacent to the installed infrastructure. There is no predicted significant effect on wider scale sediment transport rates or patterns, and will not result in any net change in the volume of sediment available in the local or regional system.
F16	9.10.22- 9.10.26	Natural England advises that we do not regard a change to new hard sediment as a beneficial impact, as this is loss of what would naturally be present. Additionally, as this is a permanent change, the magnitude cannot be Minor based on the Applicants own definitions.		We advise the Applicant updates the ES assessment accordingly.	The Applicant is clear within **paragraphs 9.10.22** and **9.10.23**, **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** **[App-050]** that any biodiversity and biomass increase as a result of introduction of new hard substrate may also have indirect adverse

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					effects on the soft sediment communities and also represents a change in the baseline. The final sensitivity assessment is also regarded as medium and is not noted as positive to sediment biotopes.
F17	9.10.43	It is stated in this section that *'In total, 2.35km of route length (per cable) may require a level of alternative protection, such as rock dumping. Overall, the engineering study has identified that a mechanical cutting trencher is necessary for up to 54% of the route length, of which 13% is considered likely to require further protection with rock placement. The remaining 46% is considered possible to achieve with jet trenching. This can be further clarified when route- specific geotechnical data is obtained at the pre-construction stage and the burial potential is confirmed (RED, 2022)'*. Natural England requires clarity on where this information has been sourced, and whether this includes all aspects cabling, or just the export cable? We advise that consideration needs to be given to the impact this could have on the efficacy of the mitigation measures proposed generally, considering less than half the route appears to be suitable for jet installation.		We advise that the source of this information is provided, and that the impact of this on the mitigation measures is considered here and throughout the impact assessment. We advise that, based on this situation a Cable Burial Risk Assessment, including route-specific geotechnical data is provided at the consenting stage.	The source of this information is provided within **Appendix 9.5: Technical Note Cable Corridor area mitigation for sensitive features, Volume 4 [APP-145]** and relates to the export cable. Geotechnical information will be collected after the DCO is made with the cable burial risk assessment (which will be submitted for approval, prior to construction commencing, secured in Condition 11(1)(n) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009])** also carried out after consent award. Please see the Applicant's response to F11 for further details.
F18	9.10.3	Natural England seeks clarity on whether any rock protection is likely to be required around the HDD exit pit, either temporarily or permanently.		We advise information is provided on this and the ES chapter updated accordingly including any mitigation measures.	As indicated in the ES, the final construction design for the landfall HDD, including the need for rock protection at the HDD exit pit, will be determined post-consent and will take into account pre-construction ground investigation surveys.
Nearshore Grounding of Vessels					
F19	[APP-050] 9.3.19, C-283	It is stated in this section that *'RED confirmed that floatation pits are no longer required for Rampion 2. RED will commit to using an alternative solution, such as rock filter bags (or similar) for seabed preparation purposes.'* Natural England supports the commitment to not use floatation pits, given the known impacts and loss of irreplaceable habitat incurred by this methodology for Rampion 1. It is stated in this section that *'Gravel bags laid on the seabed to protect the cable barge during construction of Rampion 2, will be removed prior to*		Natural England advises that an appraisal of all possible options is provided, which includes consideration of lessons learnt from Rampion 1. This is required so that the full environmental impacts can be considered and assessed, and to evidence the achievability of mitigation. Please also see previous comments in relation to the use of gravel bags.	The Applicant highlights that, as set out within the ES, the final construction design for landfall HDD will be determined post-consent and will be based on detailed geotechnical and geological data to develop the final HDD alignment that is in keeping with its commitments including minimising the distance of the route through subtidal chalk as per C-269 (secured in Condition 11(1)(c)(v) of the dMLs (Schedules 11 and 12 of the **draft**

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		the completion of construction, where practicable'. Natural England advises that this commitment is not sufficient in relation to mitigating impacts on priority habitats, Annex I habitat and potential habitats suitable for bream nests. If gravel bags are to be used, the Applicant needs to provide sufficient evidence that they can be removed and that the bags will not break down during use (particularly from abrasion with the barge). We note there is inconsistency throughout the application documents regarding the methodology to be employed. We advise that the Applicant should provide a lesson learnt from Rampion 1 and a full appraisal of all possible options, with a commitment to using the methodology that minimises the environmental impacts the most. This should include the possibility of extending the HDD further out. The total impacts of			DCO **[PEPD-009])** in the **Commitments Register [APP-254]**. Taking construction risk and the maximum distance limitations of the technique into account, it is not possible to extend the HDD to the extent that all the inshore chalk area is avoided, and it is on this basis that the assessment has been undertaken and presented within **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [App-050]**. In response to Issue Specific Hearing 1 agenda item 46, the Applicant has produced an assessment of temporary gravel beds: **Appendix 13 - Further Information for Action Point 45 and 46 (document reference 8.25.13)**.
F20	Table 9.6 (point relating to Section 42 Consultation (ID: 372)	Whilst we understand that the Applicant is committing to minimising the distance of the route through subtidal chalk, we advise that our previous advice regarding consideration of extending the HDD exit pit location further offshore to potentially further minimise impacts on chalk does not appear to have been considered.		We advise this is considered as part of an appraisal of all potential options to minimise the damage to this irreplaceable habitat.	As indicated in the ES, the final construction design for landfall HDD will be determined post-consent and will be based on detailed geotechnical and geological data to develop the final HDD alignment that is in keeping with the Applicant's commitments including minimising the distance of the route through subtidal chalk as per C-269 (secured in Condition 11(1)(c)(v) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009])** in the **Commitments Register [APP-254]**, whilst appropriately taking construction risk into account.
Priority Habitats and Micrositing					
F21	[APP-050] Table 9.14 9.6.22, C-269, [APP-137] Appendix 9.3 Subtidal Benthic	Natural England notes that following key Habitats of Principal Importance (Section 41 of the NERC Act (2006)) have been identified within the study area: • ***Sabellaria spinulosa*** • **Littoral, sublittoral chalk, subtidal chalk** • **Fragile sponge and anthozoan communities on subtidal rocky habitats**		We advise that the requirement to avoid priority habitats where possible is specified in the commitments, and that this should be a condition of the DCO/DML. The monitoring to inform micrositing should also be included within the IPMP. NB: Rampion 1 microsited around areas of stony reef in consultation with Natural England and the	The Applicant has committed to undertaking targeted pre-construction surveys of priority habitats as referenced in the **Offshore In Principle Monitoring Plan [APP-240]** and secured in Condition 16(2)(b) of the dMLs (Schedules 11 and 12 of the draft DCO **[PEPD-009]**. The Applicant will ensure the extent of these features are mapped as part of these surveys and can confirm that these data

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	Characterisation Report	• **Peat and clay exposures** • **Sublittoral sands and gravels, and sheltered muddy gravels** Additionally, the following Annex I features have been identified: **Annex I stony reef** **Annex I Bedrock Reef** Black seabream (a feature of the adjacent MCZ) nests have also been known occur over the cable corridor. Natural England's conservation advice suggests these are often found on near horizontal bedrock with a thin layer of sediment, and often track the moderate energy infralittoral rock and thin mixed sediments feature of the MCZ. Nests are often associated with rocky outcrops in shallow waters (<10 m) with thin sediment veneers. Natural England advises that these features should have their extent fully mapped as part of the pre-construction surveys, to inform avoidance via micrositing around them wherever possible. In addition to known black seabream nests sites, we advise that, as part of the pre-construction survey, suitable habitat for bream nesting is mapped. In relation to stony reef, we advise Golding (2020) is considered in addition to Irving (2009). We advise that the commitment to micrositing in relation to these features (C29) should also be applied to the siting of turbines, construction equipment (such as jack up barges and anchors), and all operations and maintenance works. This will require the Applicant to have data less than two years old to inform any ongoing operations and maintenance works that results in direct disturbance to areas where priority or Annex 1 biogenic reef habitats could be present.		MMO so there is a similar expectation that Rampion 2 would instigate micrositing too.	will be less than two years old to inform installation and operation/maintenance activities. Proposals for micrositing around priority habitats are presented within the **In Principle Sensitive Features Mitigation Plan [APP-239]**. The final Plan is to be submitted to and approved in writing by the MMO, as secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**). Additionally, Conidition 11 (1)(a) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**) secures a design plan that must include details of any exclusion zones/ environmental micrositing requirements.
F22	[APP-050] Table 9-14	Natural England requires clarification that both outcropping chalk and chalk with a thin sediment veneer, which would also be considered subtidal chalk, have been considered in the assessment.		Natural England requests that the Applicant provides clarity on this and ensures that the ES has assessed outcropping chalk correctly.	The Applicant can confirm that all chalk has been considered in relation to potential impacts within **Chapter 4: The Proposed Development, Volume 2 [APP-045]** thereby

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					presenting the worst case on the occurrence of chalk across the Order Limits.
F23	9.6.22, Table 9.14	It is stated in this section that *'Observations of discrete Sabellaria spinulosa reef habitats were deemed to be of low 'reefiness' across the development site.* Natural England advises that *Sabellaria spinulosa* reef of all quality is protected under Section 40 and 41 of the Natural Environmental and Rural Communities (NERC) Act 2006. Therefore, due regard must be given to the conservation of this habitat. We advise these biotopes are given national importance.		Natural England advises that all areas of *Sabellaria spinulosa* and stony reef are identified and mapped as part of the pre-construction survey to information micrositing and this should form part of the IPMP. We advise that this work is key to informing the micrositing of the cable route to avoid these features and is in line with what occurred for Rampion 1.	The Applicant has committed to undertaking targeted pre-construction surveys of priority habitats, including *Sabellaria spinulosa* and stony reef, as referenced in the **Offshore In Principle Monitoring Plan [APP-240] (**as secured in Condition 11(1)(j) of the dMLs Schedules 11 and 12 of the **draft DCO [PEPD-009]**). Proposals for micrositing around priority habitats is presented within the **In Principle Sensitive Features Mitigation Plan [APP-239] (**as secured in Condition 11(1)(k) of the dMLs Schedules 11 and 12 of the **draft DCO [PEPD-009])**.
F24	9.5.6, 9.3.21	Natural England seeks clarity on whether all areas where potential reef was identified from the geophysical survey were investigated with DDV. We advise that this will be required for pre-construction surveys to ensure the full extent of all areas of reef is understood to inform micrositing.		Natural England advises that all areas of *Sabellaria spinulosa* and stony reef are identified and mapped as part of the pre-construction survey to information micrositing and this should form part of the IPMP.	The Applicant can confirm that representative examples of all potential features of conservation interest (including Habitats of Conservation Importance (HOCI)) were adequately ground-truthed within the baseline characterisation study **Appendix 9.3: Rampion 2 Offshore wind farm subtidal benthic characterisation survey report, Volume 4 [APP-137]**. The Applicant has committed to undertaking targeted pre-construction surveys of priority habitats, including *Sabellaria spinulosa* and stony reef, as referenced in the **Offshore In Principle Monitoring Plan [APP-240] (**as secured in Condition 11(1)(j) of the dMLs Schedules 11 and 12 of the **draft DCO [PEPD-009])**, which aims to map the full extent of all *Sabellaria spinulosa* and stony reef.
F25	C-270	Natural England advises that across industry a 50m buffer is implement around all Sabellaria spinulosa reef to reduce the likelihood of direct impacts.		We advise that the commitment/Schedule of mitigation is updated to include the 50m buffer.	The Applicant has included a Commitment (C-270 of the **Commitments Register [APP-254]**), which comprises: "*As part of the routeing design, a working separation distance (buffer) will be maintained wherever possible from sensitive features, notably black seabream nesting areas, as informed by the outputs of the physical*

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					processes assessment, to limit the potential for impacts to arise (direct or indirect)." This commitment is included within the measures set out within the **In Principle Sensitive Features Mitigation Plan [APP-239] (**as secured in Condition 11(1)(k) of the dMLs Schedules 11 and 12 of the **draft DCO [PEPD-009]),** which also details the approach to establishing buffers for sensitive receptors where avoidance can be achieved within the routeing design. Where avoidance is possible, the buffer will be set based on the potential for significant effects to arise on the receptor as informed by the physical processes assessment. The Applicant considers this to be more appropriate than a blanket buffer commitment.
F26	C-272	In addition to considering cable laying techniques that minimise the footprint, consideration should also be given to reducing suspended sediment, and maximising recovery/avoiding persistent trenches.		We advise this is considered further by the Applicant as part of the outline Cable Specification and Installation plan.	Consideration will be given to reducing suspended sediment, and maximising recovery/avoiding persistent trenches in the Cable Specification and Installation Plan, which will be submitted to and approved in writing by the MMO, as secured in Condition 11(1)(n) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**).
F27	[APP-050] 9.9.3- 9.9.16	Natural England advises that habitat loss or disturbance during construction should not be contextualised in relation to habitat availability in the wider area, particularly where it is protected under Section 41. Where the cable is installed through chalk, this represents a permanent loss of irreplaceable habitat listed as a Habitat of Principle Importance as under section 41 of the Natural Environmental and Rural Communities (NERC) Act 2006, which both the developer as a statutory undertaker and the regulator have a duty to protect. We understand that it is currently thought a mechanical trencher may be required over 54% if the route, which has the potential to cause wider damage to chalk compared to some of the other trenching methods mentioned. Therefore, the magnitude of impact should be Major/Moderate.		We advise the magnitude is amended to reflect permanent loss of irreplaceable chalk, and that there is a clear commitment to how evidence will be provided to show the mitigation measures have been adhered to. We advise monitoring will be required and that this should be secured in the monitoring plan. Natural England advises that further consideration is required in relation where trenched chalk will be deposited. Ideally it would infill any trench as a form of cable burial protection (rather than impacting on other habitats) decreasing the need for further external cable protection. However, it should be noted that because the structure of the chalk will be irreparable will still be classed as a permanent impact.	The assessment of permanent habitat loss is presented in **Section 9** of **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]**, with the sensitivity of chalk afforded a 'high' sensitivity category within the assessment as a result of its protected status. Recognising that due to the widespread nature of chalk in the region, often as underlying geology beneath surficial sediment cover, not all chalk can be avoided, the Applicant has provided its approach to minimising permanent loss of chalk within the **In Principle Sensitive Features Mitigation Plan [APP-239]**, which includes the use of specialist equipment to minimise impact footprints in such areas where full avoidance is not possible. The development of the

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		We advise the mitigation measures are amended to allow for more detailed consideration particularly measure C-272. Natural England should be consulted on the Cable Burial Risk Reporting and the Outline Cable Specification and Installation Plan at the consenting stage. Within these, we would expect to see evidence that the commitments proposed have been adhered to and the loss of chalk minimised as far as possible. We disagree that the current information on the mitigation measures provided allows the reduction of the magnitude of impact to Negligible. Natural England advises that monitoring of the of the cable route through chalk will be required and that this should be considered in the monitoring plan.			mitigation, which will be provided in the final mitigation Plan, forms an important component of the approach to ensuring the 'minor' magnitude impact assigned to chalk receptors is appropriate. The final Plan will be submitted to and approved in writing by the MMO, as secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009])**. Alongside the Cable Specification and Installation Plan, Condition 11(1)(n) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**), both of which will draw upon the cable burial risk assessment (secured in Condition 11(1)(n) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009])** . The **Offshore In Principle Monitoring Plan [APP-240] (**as secured in Condition 11(1)(j) of the dMLs Schedules 11 and 12 of the **draft DCO [PEPD-009]**) presents details of the monitoring proposals. The Applicant confirms that trench cutting on the seafloor using a mechanical cutter would be able to deposit the majority of the cuttings back into the trench, however this process will obviously be influenced by the characteristics of the chalk rock itself.
F28	[APP-050] 9.9.3- 9.9.13	While the same advice applies for any loss of cobble reef *Sabellaria spinulosa,* peat and clay exposures, and bream nests etc. (as the environmental conditions may no longer be suitable where they had potentially been before), we understand that in the first instance the intention will be to avoid these habitats, whereas not all chalk can be avoided. We advise that, should micrositing not be possible, then recovery will need to be robustly demonstrated in the monitoring. The assessment should assume the worst-case scenario that these features cannot be avoided. The assessment in relation to *Sabellaria spinulosa* refers to recovery within two to ten years, but this does not consider if the underlying habitat has been lost or changed, and therefore *Sabellaria spinulosa*		We advise that the Applicant further considers the magnitude of impact and sensitivity with regards to these features, and that monitoring of recoverability is included in the IPMP.	The **Offshore In Principle Monitoring Plan [APP-240] (**as secured in Condition 11(1)(j) of the dMLs Schedules 11 and 12 of the **draft DCO [PEPD-009]**) presents details of the monitoring proposals. The Applicant notes that monitoring proposals have been based on the identification of significant effects within the EIA. Where relevant, the Applicant will consider whether, in light of Natural England's comments, any additional detail is required within the current **Offshore In Principle Monitoring Plan [APP-240]** secured in Condition 11(1)(k) of the dMLs Schedules 11 and 12 of the **draft DCO [PEPD-009]**).

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		cannot recover in such locations. We advise this will require monitoring to demonstrate recovery.			
F29	9.10.2	We do not agree with the methodology of contextualising the magnitude of impact from long-term habitat loss, with it being 0.6% of the proposed DCO. This is an oversimplistic assessment, given that habitats are present in different proportions within the boundary. We do not consider any loss of biotopes representing subtidal chalk, *Sabellaria spinulosa*, stoney reef, peat and clay exposures, or bream nests as Negligible in magnitude. Based on the definitions in Table 9.18, permanent loss is either Major or Moderate magnitude, and therefore at a minimum the magnitude here needs to be Moderate, as opposed to Negligible which suggest no sensitivity of the receptor to this change. Natural England also does not agree with the concept that changing the habitat is a beneficial effect, as it represents a change from natural habitat to a habitat type that is not natural in this area.		We advise that the assessment is revised by the Applicant to account for this.	The consideration of total habitat loss presented within paragraph 9.10.2 of **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]** represents an overall (total) percentage loss across all habitats within the proposed Order limits to provide an overall context of impact magnitude as a result of the total area subject to the installation of infrastructure. The sensitivity of the habitats within the area have subsequently been considered in order to provide the effect significance finding. The location of specific infrastructure within the proposed Order Limits is not yet known and it should be noted that project design will also be subject to mitigations through avoidance of sensitive features where practicable as informed by pre-construction surveys. The Applicant also clarifies that no account of any potentially beneficial impacts arising from a change in habitat type as a result of the introduction of infrastructure is taken within the assessment.
F30	[APP-050] 9.9.72	We advise that in addition to underwater noise from UXO clearance, the potential for this activity to physically damage the priority habitats, designated site features and seabream nests outside of the MCZ also needs to be considered.		Natural England advises that the Applicant needs to consider the potential impacts from UXO detonation on benthic habitats and/or mitigation measures for making the UXO safe without impacting on benthic habitats.	The Applicant is not seeking UXO clearance consent at this stage. Should UXO be identified within the Proposed Development area that require removal for safety reasons, a separate Marine Licence will be applied for at that stage, when details of the number, location(s) and size(s) of the UXO are better understood. This will include assessment of the potential for seabed disturbance and effects on proximal sensitive habitats, as relevant and appropriate. The Applicant has included a Commitment (C-275 of the **Commitments Register [APP-254]**), to the use of low order techniques as the primary method for detonation (where required).
Sediment Plume					
F31	[APP-050]	Natural England previously requested illustrative plume modelling to understand the impact ranges presented in the Table, in relation to impacts on		We advise that a clearer figure is provided by the Applicant in an updated chapter, and that further consideration is given to this matter in line with our	As detailed within **Chapter 6: Coastal processes, Volume 2 [APP-047]** fine sediment may persist in suspension for longer

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	Table 9.6 (point relating to Section 42 Consultation (ID: 353, 414, 415, 416, 417, 418, 426)	surrounding designated sites. Whilst we note that the Applicant has attempted to address this with the provision of Figure 2.3 in Appendix 6.3, the 50m buffer on this is not discernible, and the 500m buffer is unclear. It also does not specifically demonstrate depth contours within the adjacent designated sites (Kingmere MCZ and Offshore Overfalls MCZ). We seek clarification that, given the volume of underlying chalk substate, chalk has been considered specifically in the plume modelling. Natural England is aware that persistent chalk plumes were visible as part of the Rampion 1 construction, and therefore advises that it is important that this has been specifically considered as part of Rampion 2.		comments on marine processes, so that the impacts on benthic features of designated sites can be clearly and fully understood. We advise that detail is added to the reporting to demonstrate chalk plumes have been considered, based on lesson learnt from plumes that occurred during Rampion 1's construction. Monitoring of chalk plumes should be included within the IPMP.	than sands (order of days) but the plume will be subject to significant dispersion in that time, reducing any change to SSC to tens of mg/l or less in the same timeframe. As a result of dispersion, no measurable thickness of deposit or accumulation of fine sediment is expected. **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]** gives due consideration of the characterising biotopes to increased SSC and sediment deposition. It is noted that the underlying chalk is exposed extensively along this coastline. Chalk might be put into suspension as anything from a fluid mud/fine suspension to big chunks, and/or anything in-between (depending on the geotechnical properties of the chalk locally, and the method and tool used to disturb it). The density of chalk is not dissimilar to other sediments in this context and so the behaviour of a plume would be broadly similar. The outputs presented within the ES (SSC and thickness of deposition) therefore equally apply to all grainsizes of chalk. Furthermore, loose chalk boulders (and likely smaller pieces) are commonly observed on the beach and seabed. The introduction of an additional relatively small volume of chalk clasts (especially following a reasonably short period of reworking, e.g. one large storm) would not noticeably change the seabed in this area.
F32	Table 9.6 451	As previous highlighted to the Applicant Natural England highlights that plume modelling for Rampion 1 may no longer be appropriate for Rampion 2 due to progression of sustainable development in the convening time e.g., construction of Rampion 1 and changes to the aggregate's licenses. Natural England advises that robust justification should be provided as to why this is still applicable.		We advise this justification is provided by the Applicant as part of the consenting phase.	The Applicant can confirm that new (spreadsheet based) modelling for the Rampion 2 assessments for a range of different activities causing sediment disturbance was undertaken as detailed within **Chapter 6: Coastal processes, Volume 2 [APP-047],** Section 6.8 Methodology for ES assessment - Assessment of potential changes to suspended sediment concentration and seabed deposition. The results are described as consistent with previous plume modelling for Rampion 1 (and other OWFs), but are not directly reliant on them.

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F33	Table 9.8	Natural England notes that the wording of the activity of impact line two in Table 9.8 should be clarified. We advise the wording is amended to recognise that temporary increase in SSC and sediment deposition is an issue for as far as the plume extends, and not just within the DCO limits.		We advise this wording is amended by the Applicant and informs the monitoring requirements within the IPMP.	The Applicant can confirm that indirect impacts outside the DCO Limits have been fully assessed, and the table is incorrect. As stated within **section 9.4**, **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** **[APP-050]** indirect impacts from SSC and deposition were undertaken for the wider benthic study area which includes a 16 km buffer surrounding the array area and offshore export cable corridor in order to include the 16 km maximum sediment plume distance during spring tides. This is clear within the Chapter. This has been added to the Errata submitted at Deadline1.
F34	[APP-050] Table 9.8	We note that habitat disturbance during the operation and maintenance phase is prefaced by the word 'temporary'. We advise that it should not be assumed that this impact would be temporary. We advise that it is also possible that cable maintenance activities could lead to temporary increase in SSC and sediment deposition.		We advise this wording is amended, and that the full range of relevant impacts are assessed.	The Applicant can confirm that the assessment considered the impact to biotopes from increases in SSC and deposition within the operation and maintenance phase, however the MDS was not stipulated. The impact to be assessed was agreed throughout the scoping and consultation process.
F35	9.9.28, 9.9.43-9.9. 44	We acknowledge the description that '*Drilling mud noted as persisting and very high levels of suspended sediments expected around export cable route'*. We seek clarification that this has been considered in the plume modelling. The text suggests that the release of drilling mud has the potential to persist in suspension for days or longer. We advise this timeframe is not consistent with a negligible magnitude.		We advise clarification is provided by the Applicant and consideration is given to updating the magnitude with an updated ES chapter.	Drilling mud might be released in the offshore ECC as part of HDD at the landfall. Any drilling mud that is put into suspension would behave similarly to any other fine sediment in suspension (as already described for plumes generally). Plumes associated with HDD could be advected up to the tidal excursion distance in timescales of hours. Beyond this time, the concentration of these plumes is expected to become progressively dispersed and the level of SSC will fall to levels within the range of natural variability. The magnitude of this impact will therefore not be re-assessed and the Applicant considers the assessment to be robust and accurate.
F36	9.9.26	Natural England disagrees that the impacts within the 500m buffer, where they affect the MCZs, can be determined to be Minor. The impact on features within this area should not be contextualised as being small within the context of the whole of the MCZs. We advise more detailed consideration is required in relation to impacts on the features		We advise that further consideration is given by the Applicant to impacts on the specific features of Kingmere and Offshore Overfalls MCZs within the ES.	The assessment presented within **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** **[APP-050]** sets out the potential impact magnitudes based on the physical processes assessment, which identifies limited impacts due to suspended sediment concentrations (SSC) and subsequent deposition over areas at 50m to 500m

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		specifically within this area of impact. We disagree with the overall magnitude of impact being Minor.			distance from the location of the construction activity on a worst-case basis, noting this includes an assumption that works are conducted on the boundary of the Order limits itself, closest to the MCZs. As illustrated in **Figure 6.3.4** of **Appendix 6.3: Coastal processes technical report: Impact assessment, Volume 4** [APP-131], even with this assumption, the only anticipated overlap to a discrete area on the northern boundary of the Offshore Overfalls MCZ and the western boundary of the Kingmere MCZ. SSC and subsequent deposition in these areas is assessed as being low level and short-term, with characterising habitats noted as naturally subject to a degree of sedimentation and scour and characterising species are therefore likely to tolerate intermittent episodes of sediment movement and deposition. The Applicant considers the assessment presented to be robust and adequate.
F37	In-combination 9.12.13	Natural England advises that any modelling conducted in 2012 needs to be validated to consider the Rampion 2 proposals (which are closer to the aggregates sites) and would need to take into account the current aggregates licences.		We advise this evidence is provided by the Applicant to inform the cumulative impact assessment and the ES updated accordingly.	The Applicant considers the results of the modelling undertaken for Rampion 1 relevant as informing scale of potential interactions with the Proposed Development, however specific consideration of the potential for cumulative interaction between the Proposed Development and aggregate dredging activities is provided in **Chapter 6: Coastal processes, Volume 2 [APP-047]**. The finding of this assessment was that small number of active aggregate dredging license areas (namely: Inner Owers; Inner Owers North; and Inner Owers Extension) are sufficiently close to the Proposed Development (within one tidal excursion distance) that an overlapping plume effect is at all likely. The orientation of the tidal axis means that interaction between plumes created by aggregate dredging and activities in the array area are very unlikely. Some overlap of plumes might occur in relation to export cable burial in the offshore end of the export cable corridor only, however, as assessed in **Section 6.9 paragraphs 6.9.21** to **6.9.31** of **Chapter 6: Coastal processes, Volume 2 [APP-047]**, the extent and duration

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					of sediment plumes from cable burial are very limited. Any cumulative increase in either the spatial footprint or peak concentration of sediment plumes are therefore likely to be indistinguishable from background levels. Any associated cumulative changes in bed level (different to that already assessed for the Proposed Development alone) are also unlikely to be measurable in practice. It is on this basis that the assessment for benthic ecology identified only minor cumulative effects arising, which are not significant.
Designated sites					
F38	[APP-050] Table 9.13	Natural England advises that potential benthic supporting habitats identified in the conservation advice for the bird features of Solent and Dorset Coast SPA are listed here.		We advise this is chapter is updated to include supporting habitats of the SPA which is import [sic] for wider ecosystem consideration in the EIA.	The Applicant has undertaken assessment of secondary (indirect) impacts on features within the study area for the Proposed Development, within which the Solent and Dorset Coast SPA falls. The features of the site have therefore been assessed within the Chapter for secondary impacts, where appropriate, as detailed within **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]**.
F39	Table 9.13	Natural England highlights there is inconsistency with the descriptions of Solent and Dorset Coast SPA and Pagham Harbour SPA. The bird features have not been mentioned here and it is unclear if the habitat description relates to the supporting habitats for these species listed in Natural England's conservation advice. We also note that Pagham Harbour Ramsar has been omitted from this table. We advise this should be considered in relation to supporting habitats for bird features. We further note that none of the SPAs, and only Climping Beach SSSI, have been labelled on Figure 9.8 'Designated sites in relation to Rampion 2'. We advise all the sites under consideration should be clearly labelled.		We advise this is updated by the Applicant to help support the Ornithological considerations.	The Applicant can confirm that some of the differences in descriptions of the SPA's reflect the differences within the conservation packages associated with each designation. **Table 9-13** within **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]** makes it clear what sites have been taken through to the assessment. An updated Figure 9.8 with all the sites under consideration clearly labelled will be submitted to the Examination at Deadline 2.
F40	Table 9.13	We advise the features of SSSIs should match the citation on Natural England's Designated Sites System.		We advise this is reviewed by the Applicant and the ES updated accordingly.	The Applicant notes that there are some differences between the citation presented for Bognor Reef SSSI in **Table 9-13** within **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]** in comparison to the citation given on Natural England's Designated Sites System. However, an

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					update to the features (to include lowland acid grassland and Earth heritage (lower shore rocks) would not change the outcome of the assessment, as such the Applicant does not intend to update the assessment.
F41	Table 9.6 (point relating to Section 42 Consultation (ID: 357, 398, 405), 9.6.24, 9.6.28	Natural England seeks clarification on whether habitats protected under the NERC Act/ Habitats of Principal Importance identified in the intertidal area will be entirely avoided due to the use of HDD. We note that Climping Beach SSSI and Worthing Lumps Local Wildlife Site (LWS) will be subject to mitigation measure C-43, and so there will be no direct impacts on these sites. We seek clarification on whether access to these areas by works vehicles or equipment will be required.		We advise clarity is provided on this point by the Applicant, to provided confidence in the commitment to fully avoid direct impacts on the SSSI and that priority habitats will be avoided in the intertidal area. If there is any reason why this might not be possible, this should be presented upfront as a worst-case scenario.	The Applicant can confirm that all such habitats will be avoided in the intertidal area and draws attention to the following: Commitment C-43 of the **Commitments Register [APP-254]**: Offshore The subsea export cable ducts will be drilled underneath the beach using horizontal directional drilling (HDD) techniques. As noted in **Table 9-6** of **Chapter 9: Benthic Subtidal and Intertidal Ecology, Volume 2 [APP-050]**: The onshore landfall proposed DCO Order Limits overlaps with Climping SSSI. However, this is to allow for an area of HDD works, which will be underneath the cliff face and the intertidal area. It will not be on the surface of the beach. The overlap with the proposed DCO Order Limits has not been removed, to allow space for the HDD. Potential indirect effects to features have been assessed within **Section 9.9** of **Chapter 9: Benthic Subtidal and Intertidal Ecology, Volume 2 [APP-050]**. The Applicant can confirm that there will be no direct impacts to the Climping Beach SSSI and Worthing Lumps Local Wildlife Site (LWS). Access to these areas by works vehicles or equipment will not be required.
Other					
F42	[APP-050] Boulder Clearance Table 9.6 ID: 381, 382, 383	It is in this section it is stated that '*RED will undertake pre-construction surveys to determine the exact amount of clearance required prior to construction within the array area and the offshore export cable corridor. Micro-sitting around boulders will be considered where appropriate. Furthermore, RED propose to use a plough to remove boulders.'* We advise that there is no specific commitment to		We advise this is considered further by the Applicant and included in the outline Cable Specification and Installation Plan.	The Applicant will indeed undertake pre-construction surveys to determine the exact amount of clearance required prior to construction within the array area and the offshore export cable corridor and micrositing around boulders will be considered were appropriate. Furthermore, the Applicant proposes to use a plough to remove boulders,

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		this, and that consideration should be given to placing boulders on similar habitats, and not on any of the habitats listed in the summary.			which will move boulders to adjacent areas of seabed and within the same habitat type. No boulders will be removed and placed on priority sensitive habitat areas to ensure no impacts from boulder placement will arise on such receptors. **Appendix 9.5: Technical Note Cable Corridor area mitigation for sensitive features, Volume 4 [APP-145]** exemplifies how the micrositing exercise will be conducted based on data from the pre-construction surveys.
F43	[APP-050] Dredge disposal 9.9.29, C279	Natural England has concerns regarding the statement that '*material excavated from HDD exit pits might also be temporarily stored within the offshore array area or export cable corridor, if and where designated as a spoil disposal area'.* We disagree with the wording that measure C279 will be of *'direct benefit to benthic habitats.'* Instead, this is about minimising impact. We advise that with any disposal locations, the Applicant would need to consider potential impacts on the designated sites, avoiding locations of sensitive features and consider placement of material on similar sediment types. Natural England has particular concerns about material being stored in proximity to bream nesting habitats. Additionally, we question if the Applicant considers that they will be able to retrieve this material successfully, particularly if it were chalk. We would expect to see monitoring included in relation to any disposal locations within the DCO boundary.		We advise this is further considered by the Applicant in the Outline cable specification and installation plan, and Natural England is consulted on a final plan. Monitoring to ensure that the disposal impacts whereas predicted e.g. did not impact negatively on designated site features and/or supporting habitats should be included within the IPMP.	The Applicant notes this comment from Natural England and, whilst the wording identified the benefit delivered by the measure was in relation to minimising and managing impacts, the Applicant agrees that the measure is related to minimising impacts rather than providing a direct benefit to benthic habitats. All relevant potential impacts arising from the deposition of spoil material arising from the Proposed Development have been assessed in relevant Chapters of the ES, recognising the occurrence of sensitive receptors in the area.
F44	Marine INNS 9.9.61, 9.9.65, 9.10.32	Natural England should be consulted on the final Project Environmental Management Plan (PEMP), which we understand will include a biosecurity plan to ensure that the risk of potential introduction and spread of Marine INNS from increased vessel activity is minimised.		We advise that the Applicant provides an updated outline PEMP throughout the examination process. Consultation with Natural England on the finalise plan (pre-construction) is a condition as part of the DCO/DML.	The Final Project Environmental Management Plan will be submitted to the MMO in accordance with Schedule 11, Part 2, Condition 11 of the **draft DCO [PEPD-009]**, the MMO may consult with Natural England (as the statutory nature conservation body) on the final plan.
F45	Marine pollution 9.9.68, 9.10.37	Natural England should be consulted on the final Marine Pollution Contingency Plan (MPCP) in		We advise that the Applicant provides an updated outline MPCP throughout the examination process. Consultation with Natural England on the finalise	The Final MPCP, included within the Final Project Environmental Management Plan will be submitted to the MMO in accordance with

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		relation to the measures to prevent accidental release of pollutants.		plan (pre-construction) is a condition as part of the DCO/DML.	Schedule 11, Part 2, Condition 11 of the **draft DCO [PEPD-009]**, the MMO may consult with Natural England (as the statutory nature conservation body) on the final plan.
F46	9.10.7	We advise that in relation to '*Temporary habitat disturbance from jack-up vessels and cable maintenance works',* indirect impacts on Kingmere MCZ and Offshore Overfalls MCZ should be considered. We advise that the Applicant need to demonstrate how ongoing works will continue to microsite around sensitive features, and that this will require ongoing data collection where there is biogenic reef.		Natural England advises that monitoring will be required to inform recovery of benthic habitats from construction and the 5 yearly review of the Operations and Maintenance plan, which is yet to be agreed. We will work with the Marine Management Organisation (MMO) to secure adequate monitoring conditions.	The assessment presented in **Chapter 9: Benthic Subtidal and Intertidal Ecology, Volume 2 [APP-050]** includes consideration of the potential for indirect effects (SSC and deposition) on the MCZs as a result of operations and maintenance activities at the Proposed Development, as detailed in **paragraphs 9.10 6 to 9.10.12** of **Chapter 9: Benthic Subtidal and Intertidal Ecology, Volume 2 [APP-050]**, making reference to the assessment presented for the same impacts arising from construction. Where micrositing has been required during construction, the Applicant asserts that the measure would be anticipated to provide for maintenance at the same infrastructure locations.
F47	9.10.11	Natural England advises that further explanation is provided here as to how these mitigation measures will be applied to cable repair works during the operational period. We do not agree with the reduction to negligible here, as it is unclear that measures such as installation techniques would carry over to the operational works.		We advise further information is provided by the Applicant to demonstrate how the mitigation measures would be applicable to the operation and maintenance phase.	The Applicant has updated commitment C-272 to include reference to the operation phase of the Proposed Development. *C-272 Adoption of specialist offshore export cable laying and installation techniques will minimise the direct and indirect (secondary) seabed disturbance footprint to reduce impacts, which will provide mitigation of impacts to all seabed habitats, but particularly chalk and reef areas as well as potential (unknown) black seabream nesting locations, where avoidance is not possible. The Applicant will seek to utilise the most appropriate technology available at the time of construction* ***and during operation, if required,*** *to reduce the direct footprint impact from cutting machinery, where practicable.* This will be added to the next iteration of the **In Principle Monitoring Plan [APP-240]**, the delivery of which is secured in Condition 11(1)(j) of the dMLs (Schedules 11 and 12 of

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					the **draft Development Consent Order (DCO) [PEPD-009]**).
F48	Decommissioning 9.11	We support the decommissioning phase being assessed as potentially the same significance as the construction phase at this stage. We advise that all scour and cable protection should be considered as needing to be removed.		We advise this is considered by the Applicant during the consenting phase as part of an Outline Decommissioning Plan.	The Applicant welcomes Natural England's support that the decommissioning phase has been assessed as potentially the same significance as the construction phase. The Energy Act (2004) requires that a decommissioning plan must be submitted to and approved by the relevant Secretary of State, a draft of which will be submitted prior to the construction of the Proposed Development. The decommissioning plan and programme will be updated during the Proposed Development's lifespan. To take account of changing best practice and new technologies, the approach and methodologies employed at decommissioning will be compliant with the legislation and policy requirements at the time of decommissioning. In accordance with the requirements provided in the **draft DCO [PEPD-009]**, a written decommissioning programme will be provided prior to works commencing. The details of the proposed decommissioning process will be included within the Decommissioning Programme which will be developed and updated throughout the lifetime of the Proposed Development to account for changing best practice. It is noted that this will be subject to best practice at the time of decommissioning and surveys conducted to assess the quality of the communities established and a decision on their removal made in conjunction with the statutory authorities.
F49	9.12.17-9.12.18	While the intention may be to bury the cables, it is assumed that these cables require some cable protection allocation for where burial is not possible. This should be considered within this cumulative assessment.		We advise that cable protection is included by the Applicant in an updated cumulative assessment.	Certain impacts assessed for the project alone are not considered in the cumulative assessment due to the highly localised nature of the impacts (i.e. they occur entirely within the Order Limits only) and/or where the potential significance of the impact from the Project alone has been assessed as negligible. Therefore the impact of cable

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					protection has not been included within the CEA.
Document used: [APP-040] 5.11 Draft Marine Conservation Zone assessment					
F50	[APP-038] 7.4.28	Natural England notes that it is stated that *'the distance to the Solent Maritime SAC (15.9km at closest point)'*. We advise that the Applicant checks this, as based on Figure 9.8 of the Benthic Ecology Chapter, Solent Maritime SAC is outside of the study area, which we understand is based on the 16km tidal exclusion.		We advise this is checked and amended as necessary.	The Applicant can confirm that the distance from the Proposed Development Order limits to the Solent Maritime SAC is 20.9 km at the closest point. This information has been added to the Errata at Deadline 1.
F51	General Comment	Natural England agrees with the conclusion of no adverse effects on integrity (AEoI) alone or in combination for Solent Maritime SAC, South Wight Maritime SAC, or Solent and Isle of Wight Lagoons SAC. We understand that these sites are located outside of the 16km tidal exclusion.		N/A	The Applicant welcomes Natural England's agreement.
Document used: [APP-040] 5.11 Draft Marine Conservation Zone assessment					
F52	[APP-040] 1.3.1	We note that Utopia MCZ is in close proximity to the boundary of the study area. Therefore, we seek clarification on the preciseness of the information used to define the study area		We advise further clarity is provided by the Applicant in an updated MCZ assessment.	Utopia MCZ is located outside the benthic ecology study area based on a precautionary spring tidal excursion which informs a theoretical maximum potential Zone of Impact (ZOI) as shown in Graphic 1-1 of the **Draft Marine Conservation Zone Assessment [APP-040]** and Figure 9.8 of **Chapter 9: Benthic Subtidal and Intertidal Ecology - Figures, Volume 3 [APP-082]**. As such, there are no potential impacts to protected features of the MCZ due to separation distance from the Proposed Development. Utopia MCZ has not, therefore, been included within the MCZ assessment.
F53	3.1.3	Natural England advises that it is key that all mitigation measures are secured in any consent issued. Whilst we understand there is a commitment to implementing them, it cannot be fully understood at this stage the level of mitigation some measures may be able to provide.		We advise that all embedded mitigation measures proposed are secured in the DCO/DML. We advise the levels of mitigation provided by these measures cannot be assumed at this stage.	The embedded environmental measures set out in **Table 3-1** of the **Draft Marine Conservation Zone Assessment** [APP-040] are contained within the offshore environmental management plans, including: • **Outline Project Environmental Management Plan (PEMP)** [APP-233] • **Outline Scour Protection and Cable Protection Plan** [APP-234]

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					• **Draft Piling Marine Mammal Protocol** [APP-236] • **Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Protocol** [APP-237] • **In Principle Sensitive Features Mitigation Plan** [APP-239] • **Offshore In Principle Monitoring Plan** [APP-240] The above plans are secured through Condition 11, Schedule 11 of the **draft DCO** [PEPD-009], which relates to Pre-construction plans and documentation
F54	Table 3.1	We note that many of the measures included have limited relevance to the MCZ Assessment specifically. Measures that reduce or prevent indirect effects are relevant, such as suspended sediments, scour, or changes to seabed processes.		We advise that the Applicant update the assessment accordingly.	The Applicant considers all of the commitments included within Table 3.1 of the **Draft Marine Conservation Zone Assessment [APP-040]** are appropriate to include within the document and has detailed referenced each where relevant to specific impact assessment sections within the report. The Applicant therefore considers no updates to the document are required on this basis.
F55	C-272	We advise cable installation techniques that minimise suspended sediments, and therefore secondary impacts on Kingmere MCZ, are considered.		We advise that the Applicant should give further consideration to this within the assessment.	The Applicant confirms that indirect impacts arising as a result of elevated suspended sediments caused by cable installation have been assessed on a worst-case basis within **Chapter 9: Benthic Subtidal and Intertidal Ecology, Volume 2 [APP-050]**, Notwithstanding, the approach to mitigating significant effects is set out within the **In Principle Sensitive Features Mitigation Plan [APP-239]**, which includes provision for the use of equipment to minimise suspended sediment impacts, where practicable.
F56	Table 3.1 - measure C- 95, 7.33, 7.3.6, 7.3.10, 7.4.10, 7.4.13, 7.5.23, 7.5.30	We note that the Outline Project Environmental Management Plan (OPEMP), is currently very high level and will be developed further pre-construction. It is key this contains sufficient measures in relation to invasive species.		We advise that Natural England is consulted on the final document to agree that the final measures proposed are sufficient. And that the outline PEMP is further refined during examination.	The Final Project Environmental Management Plan will be submitted to the MMO in accordance with Schedule 11, Part 2, Condition 11 of the **draft DCO [PEPD-009]**, the MMO can consult with Natural England (as the statutory advisor to the MMO) on the final plan.

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F57	4.3.7	Natural England notes that EIA terminology and methodology to assess impacts are being applied throughout the MCZ Assessment. For clarity, the MCZ Assessment should seek to define and understand the potential of the conservation objectives being hindered by external activities/impacts. We advise that, to avoid confusion, the MCZ Assessment should not use EIA terminology. Additionally, we note that our comments within the thematic chapters regarding significance of effect and magnitude also apply to this assessment, where the Applicant has brought forward these conclusions to the MCZ Assessment.		We advise that the MCZ assessment should be amended to reflect our comment. Otherwise, agreements cannot be reach on the conclusions drawn.	The Applicant considers it has appropriately applied the assessment outcomes from the EIA relating to potential impacts arising on MCZ features, or relevant components of those features, before providing a concluding statement on the potential for hindrance of the Conservation Objectives for each feature within the **Draft Marine Conservation Zone Assessment** **[APP-040]**. Noting the concern raised, the Applicant will engage with Natural England to clarify where the assessment presented introduces confusion through terminology in order to resolve the concerns and will provide an update in due course if required. In regards to the comments on determination of impact magnitude and significance of effect, the Applicant has responded to each item raised by Natural England in its Relevant Representation (see responses to F8, F9, F15, F27, F29, F35 and F36 above). The Applicant considers the assessment presented within the ES to be robust and appropriate, and on this basis is not intending to change its findings, however the Applicant will seek to discuss and resolve these issues with Natural England.
F58	5.2.5	We note that indirect impacts that were assigned a 'Negligible' magnitude in the ES EIA have been screened out, and not taken to Stage 1 Assessment. We advise that our comments on the relevant chapters are taken into account and the screening is adjusted as necessary.		We advise that our comments on the relevant thematic chapters are considered against any decisions made in the MCZ Assessment and potential impact pathways that could hinder the conservation objectives for the site assessed.	Whilst, as noted above in response to F57, the Applicant considers the assessment presented within the MCZ assessment to be robust and appropriate, it will seek to discuss and resolve these issues with Natural England.
F59	Table 5.1	Natural England advises that where impacts have been screened out due to insignificant effects on coastal and marine processes, our outstanding comments on benthic chapter should be taken into account.		Natural England advises that the Applicant considers our comments on coastal and marine processes and the assessment updated as necessary noting that there may be residual benthic impact pathways.	See response to F58 above.
F60	7.3.3	We advise that the sensitivity of both moderate energy infralittoral rock and thin mixed sediments, and subtidal chalk (a feature of Kingmere MCZ) in relation to marine INNS, is a worst-case scenario		We advise that the sensitivity is revised to High by the Applicant in an updated assessment and mitigation measures adopted accordingly.	The Applicant has reviewed the sensitivity ascribed to these features within both the draft MCZ assessment [APP-040] and **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** **[APP-050]**, and notes that whilst

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		within Natural England's advice on operations. Therefore, we advise this is assessed as High.			the relevant components of the features considered in the MCZ assessment were given a medium sensitivity, as supported by the ecology of the characteristic species, the wider habitats were afforded a precautionary 'high' sensitivity within Chapter 9. In either case, whether a high or medium sensitivity is ascribed, the assessment outcome remains the same for the negligible impact magnitude. As such the Applicant is confident that the assessment outcome reported within the MCZ assessment is appropriate.
F61	7.4.7	It is stated that the *'maximum sensitivity of the benthic receptors is low, as a result of the tolerance and recoverability of the majority of the benthic receptors*.' We seek clarity that the WCS in terms of all relevant benthic receptors has been used to inform the maximum sensitivity?		We advise that information on the sensitivity of the receptors involved is stated by the Applicant within an updated assessment to demonstrate that the worst case in terms of sensitivity has been taken forward.	The Applicant confirms that the majority of the relevant biotopes have MarESA assessed sensitivities of either not sensitive or of low sensitivity to changes in SSC, and light or heavy smothering. The Applicant does, however, acknowledge that there are some exceptions. For the Offshore Overfalls MCZ, this relates solely to the biotope A5.261 (*Abra alba* and *Nucula nitidosa* in circalittoral muddy sand or slightly mixed sediment). For this biotope, the sensitivity is noted by MarESA as low for both changes in SSC and light smothering, but medium for heavy smothering (5-30cm deposition depth). For the Kingmere MCZ, the biotope A3.215 (*S. spinulosa* with kelp and red seaweeds on sand influenced infralittoral rock) is listed as having medium sensitivity to changes in SSC, not sensitive to light smothering (<5cm) and medium sensitivity to heavy smothering (5-20cm). Also at Kingmere MCZ, the biotope A4.231 (Piddocks with a sparse associated fauna in sublittoral very soft chalk or clay) is also of medium sensitivity to smothering (light and heavy), though is not sensitive to changes in SSC. Whilst the Applicant acknowledges that these do therefore fall outwith the 'low' sensitivity noted in the general summary statement presented in paragraph 7.4.7 of the MCZ assessment, ascribing a medium sensitivity to the assessment does not alter the outcome in

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					terms of the derived significance of effect, which remains Minor.
F62	7.2.35- 7.2.59	Natural England agrees with the sensitivity assigned to the features of Kingmere MCZ in relation to increases in suspended sediment concentrations (SSC) and sediment deposition, as these are in line with our advice on operations. However, based on the fact the 500m buffer does overlap with an area of Kingmere MCZ, we do not agree with the assessment of a Minor magnitude of impact. We disagree with this being contextualised in relation to the site as a whole. We draw your attention to our detailed comment above on this impact.		We advise that the magnitude of impacts should be revised to consider the impact on the area of overlap specifically, as opposed to contextualising this in relation to the site as a whole.	See response to **F36** above.
F63	7.4.5	We advise that our comments with regards to points 7.2.35- 7.2.59 for Kingmere MCZ also applies here in relation to Offshore Overfalls MCZ.		We refer you to our comments on 7.2.35- 7.2.59.	See response to **F36** above.
Document used: **[APP-239] 7.17 In Principle Sensitive Features Mitigation Plan** **[APP-145] 6.4.9.5 ES Volume 4 Appendix 9.5 Technical Note Cable Corridor area mitigation for sensitive features**					
F64	Executive summary, 1.1.2	Natural England has concerns regarding the plan not being finalised until the post-consent/pre-construction phase, and that it is stated the mitigation measures are not confirmed. We advise that where mitigation measures are essential to the assessment, we cannot agree to the assessment conclusions without sufficient certainty in the measures being progressed, and the ability to achieve the levels of mitigation required.		Natural England advises that there is a risk that mitigation through this plan may not achieve its aims. We advise that further investigation and information is provided by the Applicant at this stage and mitigation measures secured.	The Applicant highlights that the application of suitable mitigation is secured through Condition 11(1)(j) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]** and reiterates that the measures set out within the **In Principle Sensitive Features Mitigation Plan** **[APP-239]** at this stage need to allow scope for refinement once the final design and construction methods for the Proposed Development have been confirmed. This will enable the most appropriate project related measures to be confirmed, based on best knowledge, evidence and proven technology available at the time of construction. The need to provide scope for refinement arises, in part, due to the range of complex interdependencies common to all offshore wind farms in the early (pre-consent) development stages. These include the selection of specific infrastructure, equipment, and collection and analysis of more detailed site engineering data, which means that design work continues up until the immediate

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					pre-construction period. As a result, it is not possible to provide final detailed method statements for construction prior to consent and, as a result, the specific detail of required mitigation also cannot be finalised at this stage. In addition, and as discussed through the Evidence Plan Process (EPP) via Expert Topic Group (ETG) meetings, further contemporary data acquisition is required to provide confirmation on the location of certain sensitive receptors at the pre-construction stage, notably including ephemeral features which require survey data less than 2 years old. The Applicant will continue to engage with Natural England on the proposed mitigation measures and any relevant additional information that can be brought forward to support the proposed measures will be submitted to the Examination.
F65	1.1.3, 5.2.5	Natural England understands that final pre-construction survey data is required to inform micrositing. Natural England requests that further information is provided on the contents of the pre-construction surveys. Natural England advises the inclusion of full geophysical coverage (including side scan sonar) and full drop-down video coverage of all the sensitive features identified, as this is required to determine the extent of these features and inform micrositing. We advise that any data used to inform micrositing should be less than 24 months old at the time of construction. We refer the Applicant to our detailed comments above.		We advise that the Applicant updated the IPMP accordingly as part of the consenting process.	The Applicant will continue to engage with MMO, their advisors and the Examining Authority to develop the proposed monitoring measures. The **Offshore In Principle Monitoring Plan [APP-240]** identifies that a single survey geophysical (side scan sonar or Multibeam Echo Sounder) survey of those areas within which it is proposed that seabed works will be carried out at resolution sufficient to identify chalk habitat, stony reef, and potential *S. spinulosa* reef and is secured in Condition 16 of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**. In areas where chalk reef, stony reef, and potential *S. spinulosa* reef is identified from the review of the geophysical data, drop down video and/or stills will be deployed to confirm presence and extent. The plan also details that survey programmes and methodologies for the purposes of monitoring shall be submitted to the MMO for written approval at least four months prior to the commencement of any survey works.

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F66	1.1.6-1.1.17	We support the final plan needing to be signed off by Natural England but advise that further information is required to understand the feasibility and effectiveness of mitigation measures through the consenting phase.		We advise that further information is required, particularly geotechnical information to inform the Cable Burial Risk Assessment and this is to be updated during the consenting phase.	The **In Principle Sensitive Features Mitigation Plan [APP-239]** and the Cable Specification and Installation Plan will be developed and refined on the basis of the additional pre-construction data. Geotechnical information gathered during the pre-construction surveys will inform Cable Burial Risk Assessment. Relevant information from these plans will be shared with Natural England, with the final Plan is to be submitted to and approved in writing by the MMO, as secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**).
F67	Flowchart 1	Natural England advises that post construction monitoring will be required.		We advise this is included by the Applicant within the updated IPMP.	The **Offshore In Principle Monitoring Plan [APP-240]** details the plan for post-construction. It should be noted that the requirement for post-construction monitoring will be dependent on the findings of the pre-construction surveys
F68	Figure 2.1	Natural England advises that the offshore MCZs are missing from this Figure.		We request that these are added by the Applicant.	The Applicant has provided an updated version of the **In Principle Sensitive Features Mitigation Plan (document reference 7.17)** with Figure 2.1 marking the offshore MCZ sites at Deadline 1.
F69	Table 3-2	Natural England expect that monitoring would be undertaken to demonstrate recovery, with further measures being triggered if this was not shown.		We advise that this is included by the Applicant with the IPMP.	The **Offshore In Principle Monitoring Plan [APP-240]** presents details of the monitoring proposals. The Applicant notes that monitoring proposals have been based on the identification of significant effects within the EIA. Where relevant, the Applicant will consider whether, in light of Natural England's comments, any additional detail is required within the current **Offshore In Principle Monitoring Plan [APP-240]**.
F70	4.2, 5.2.2, 5.2.4	We advise that it should be acknowledged that up to 20% of the export cable may require cable protection, and that 54% may need to be mechanically trenched. Therefore, there is the potential for permanent habitat loss/potentially significant habitat alteration if sensitive features cannot be avoided.		We advise the limitations to the achievability of the mitigation proposed need to be fully considered by the Applicant and informed by the updated Cable Burial Risk Assessment as part of the consenting phase.	The installation of cables potentially requires differing techniques according to the nature of the seabed in different parts of the Export Cable Corridor, as informed by the cable burial risk assessment, which will be completed pre-construction but post-consent. The selection of the technique deemed most appropriate to the seabed conditions does not negate the mitigation strategy of micrositing

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		In reference to the points regarding 'routeing design and micrositing', and 'use of specialist cable laying and installation techniques' we advise that the Applicant has not acknowledged the above mechanical trenching situation, which potentially renders this mitigation ineffective over more than half the route already.			and avoidance during the routeing design works; rather, this is a critical component considered alongside the mapping of sensitive features derived from the pre-construction surveys in the cable routeing design as part of the cable specification and installation Plan, secured in Condition 11(1)(n) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**). The objective of the Plan is to identify cable routeing that delivers avoidance of sensitive features where practicable and the minimisation of impacts where this cannot be achieved. The Applicant therefore disagrees that the use of mechanical trenching renders mitigation ineffective over more than half of the route. The specific locations that require the placement of cable protection will also be determined on the results of the cable burial risk assessment and cable routeing design work and again does not negate the mitigation strategies set out within the **In Principle Sensitive Features Mitigation Plan [APP-239]** for the reasons given above. The Applicant highlights that in respect of both cable protection and cable installation works, the potential for habitat loss (where avoidance is not achievable following the application of the approaches detailed in the mitigation Plan) is assessed as such within **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050].**
F71	5.1	We refer you to our comment above regarding these mitigation measures/commitments.		Refer to our comments above.	The Applicant has responded to each point individually in the responses given above.
F72	5.2.7	We advise that a commitment to the buffers is stated in this report. We understand that a 50m buffer would be applied to all sensitive features and advise that this should be applied as a minimum to the limits of the cable corridor geophysical data collected, to account for any potential features just over the boundary. This is independent to buffering requirements in relation to other aspects.		We advise this is amended to provide commitment to the buffers and the Applicant updates the IPMP accordingly.	The **In Principle Sensitive Features Mitigation Plan [APP-239]** details the approach to establishing buffers for sensitive receptors where avoidance can be achieved within the routeing design, being defined on the basis of the potential for significant effects to arise on the receptor as informed by the physical processes assessment. The Applicant considers this to be more

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					appropriate than a blanket buffer commitment. The Applicant notes, in respect of the potential occurrence of sensitive features proximal to, but outside, the Order limits, it is unlikely that infrastructure installation will be undertaken within 50m of the Order limit boundaries, however if this was to occur, the pre-construction geophysical surveys would encompass a sufficient buffer around the Order limits and would therefore appropriately inform the need for any such separation within the cable routeing design.
F73	Figure 5.1	We note that when the environmental and technical constraints are combined visually, there already appears to be areas of potential biogenic reef that could be impacted, or where a buffer may not be possible. Whilst we support micrositing, we advise that it already appears it may not be possible to avoid some features, particularly when 4 cables will need to be installed. We also note that this figure just includes biogenic reef or potential black bream nests and advise that there are other sensitive features that have not been added (see comments above), which may compound the issue.		We advise that the mapping is updated by the Applicant to include all sensitive features that require micrositing, and that discussion is provided in relation to where avoiding features may be unavailable, or buffers may be insufficient i.e., how will impacts be minimised?	The cable routeing design illustrated in **Figure 5.1** of the **In Principle Sensitive Features Mitigation Plan [APP-239]** is based on the best available current data and demonstrates that there is the potential for the design mitigation to avoid impacts to the majority of sensitive features. The assessment and mitigation plan recognise the potential for some features to be unavoidable, however further mitigation as set out in the Plan will be applied as far as possible to ensure that where impacts are unavoidable, these are appropriately minimised. Further refinement of the routeing design will be provided on the basis of the detailed pre-construction survey data, which will establish a contemporary and definitive basis for the micrositing measures.
F74	5.2.14	We advise that the post-consent data collection will require an agreed plan to ensure that this will be sufficient to inform micrositing. We advise that an agreed monitoring plan should be approved by the MMO, in consultation with Natural England, well in advance of any surveys taking place, to ensure surveys can go ahead at the optimum time of year.		We advise that a pre-construction monitoring plan will need to be agreed in consultation with NE and this should be guided by the IPMP which should be updated by the Applicant to ensure key questions will be answered by the monitoring.	Proposed pre-construction surveys are set out in the **Offshore In Principle Monitoring Plan [APP-240]**, the final version of which is required to be submitted to and approved in writing by the MMO as secured in Condition 11(1)(j) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**). The pre-construction data and the cable specification and installation Plan, secured in Condition 11(1)(n) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**) will subsequently inform any further monitoring that may be required.
F75	5.2.21- 5.2.23	It is suggested that paleochannels will be targeted to maximise successful burial and minimise cable		We advise that a Cable Burial Risk	See response to **F11**.

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		protection. We advise that successful burial in paleochannels is dependent on the depth of sediment and how dynamic the area is. Our understanding is that sediments in this area are generally thin. Additionally, we advise that consideration needs to be given to the width of the paleochannels, as there is a possibility that four cables with appropriate separation distances will result in the outside cables being buried on the potentially shallower edges of the channel. Considering both these points, we advise that further geotechnical information is gathered and that a Cable Burial Risk Assessment is provided pre-consent as opposed to post consent, to provide confidence on whether burial in paleochannels is likely to be successful.		Assessment is provided by the Applicant pre-consent due to the uncertainty of burial in paleochannels being achievable.	
F76	5.2.21- 5.2.23	It is stated in this section that *'the geological conditions are not entirely conducive to burial. Even so, many of the geological formations along the route are considered trenchable with mechanical cutting, although other formations that are strongly cemented are likely to pose an issue'*. We advise that mechanical trenching and cable protection (over up to 20% of the route) may limit, or even prevent the recovery of sensitive features, where sufficient micrositing is not achievable. We agree that a hierarchy of jetting where possible first, before trenching is considered and minimising cable routing through harder strongly cemented formations is preferable. Pinning the of the cable and extending the HHD ducts should also be considered. Without the Cable Burial Risk Assessment and pre-construction information, we cannot fully understand the final constraints and therefore final impacts. We therefore advise that the Cable Burial Risk Assessment should be provided pre-consent.		We advise that the Cable Burial Risk Assessment should be provided by the Applicant pre-consent.	See response to **F11**.
F77	5.2.24 - 5.2.27	It is stated that *'With regards to trenching and burial, it is clear from the geophysical survey data for the offshore export cable corridor area that a mechanical trencher is required to achieve burial in chalk areas without sufficient soft sediment cover.'* We advise that this should be clearly assessed in the Benthic		We advise that impacts and mitigation success is fully considered by the Applicant in an updated Benthic Chapter. We advise that the Cable Burial Risk Assessment should be provided pre-consent.	A full assessment of potential impacts, including to chalk areas, is provided in **Section 9** of **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]** which includes consideration of the effects of

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		Ecology Chapter, as this makes some of the mitigation measures proposed for chalk unviable. We would expect to see consideration pre-consent of all options for resolving this issue of cabling through chalk, for example, consideration should be given to be possibility of pinning the cable to the seafloor to minimise the loss of this irreplaceable habitat.			habitat loss and disturbance to chalk habitats where avoidance is not possible. The Applicant notes its comments in respect of provision of a cable burial risk assessment being provided at the post-consent stage in its response to F11 above.
F78	5.2.27	In relation to *'the ability of the nearshore trencher to continue on to successfully complete the offshore scope',* we advise that a situation may exist where minimising the environmental impacts involves using different techniques for the two areas. This should not be ruled out based on cost.		We advise that it is critical the methodology selected furthest minimises the environmental impacts selected and is informed by the Cable burial risk Assessment.	The Applicant notes that impacts will be mitigated as far as practicably possible in the selection of the most appropriate mitigation measures and cable routeing design, however economic viability and construction logistics are both relevant considerations in the process. The Applicant would highlight that the cable specification and installation Plan will be subject to scrutiny prior to construction as , secured in Condition 11(1)(n) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**), which requires the final plan to be submitted to and approved in writing by the MMO. The Applicant further confirms that the final Plan will be informed by the cable burial risk assessment.
F79	5.2.29-5.2.32	We note that both these methods require support vessels in the nearshore environment. We advise that this has the potential to further impact the chalk, due to grounding of vessels. Natural England advises that although we understand that floatation pits will not be used to aid nearshore vessels, there is no clear and consistent alternative presented. We advise that full consideration of the environmental impacts of all options is provided, alongside sufficient information to determine effectiveness. Natural England has concerns that without this information, the Applicant will find that they need to amend the methodology to included floatation pits post- consent, something that NE is unlikely to be supportive of.		We advise that the Applicant provides a clear and consistent methodology alongside further information on the possible effects and feasibility.	The Applicant can confirm that flotation pits will not be required for the vessels detailed within the **Offshore In Principle Monitoring Plan [APP-240]**, and further will not be required for alternative construction vessels or approaches. Vessel grounding, where required within the inshore area, will be facilitated using bagged gravel beds to protect both the seabed and the vessel during any such grounding and subsequently removed. Evidence of experience of removing similar bagged gravel (rock) is noted in the Applicant's response to F19.
F80	7.1.2	We refer you to our comments on the Offshore In-principle Monitoring Plan.		Refer to these comments.	The Applicant has responded to each point individually in the responses given above.

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Table 4-12 Applicant's response to Natural England - Appendix G (Other plans)

Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
Document Used: [APP-240] Offshore in Principle Monitoring Plan					
G1	Executive Summary	We advise that this is the first time Natural England has had sight of this plan, and that we have not been involved in its development.		We look forward to working with the Applicant to defining the parameters of the plan to ensure it is fit for purpose.	The Applicant welcomes collaboration with Natural England to develop the **Offshore In Principle Monitoring Plan [APP-240]**.
G2		In providing our advice Natural England is drawing on our wealth of experience of post-consent monitoring discussions and implementation. We strongly advise that rather than focusing on the exact details of the surveys as highlighted by the Applicant in the IPMP; the IPMP should set out the fundamental hypotheses/questions that will be tested by the monitoring based on the outcomes of the HRA, EIA and address issues of uncertainty and/or residual impacts. In addition, Natural England highlights that, while there is agreement that IPMPs are finalised post consent based on project design and timescales; this should not limit agreeing the IPMP prior to consent. Lessons have been learnt since the development of the IPMP for Rampion 1, which are based upon ongoing and reoccurring post- consent disagreements with the developers on ecological monitoring requirements and survey effort required in order demonstrate key predictions of the Environmental Statement and/or HRA.		Because this is a fundamental plan relating to all project phases - Natural England will submit detailed advice on the IPMP at Deadline 1. We will continue to work on this plan with the Applicant through the examination to process.	The monitoring proposals within the **Offshore In Principle Monitoring Plan [APP-240]** have been based on the identification of significant effects within the EIA, and the outcomes of the HRA. Where relevant, the Applicant will consider whether, in light of Natural England's detailed advice at Deadline 1, any additional detail is required within the current in-principle Plan.
G3		Natural England is concerned with how the purpose of the monitoring is conditioned within the DCO, we advise that the DCO/DML conditions should ensure that the monitoring is relevant to the issues raised and that adaptive management is secured should post-construction monitoring identify impacts that are significantly outside of those predicted in the Application.		Natural England will work with the developer to ensure that all monitoring conditions are sufficiently fit for purpose.	The Applicant notes that monitoring proposals have been based on the identification of significant effects within the EIA. Monitoring for the Proposed Development is secured in the following locations: • Condition 11(1)(j) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]** for the **Offshore In Principle Monitoring Plan [APP-240];** • Condition 16 of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]** Condition 11(1)(j) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]** • Condition 17 of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]** • Condition 18 of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**

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Ref	Section	Natural England's Comments	RAG	Recommendations	Applicant's Response
					• Condition 20 of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009** The approach set out above appropriately secures all the monitoring considered necessary by the Applicant, and is adequate. The Applicant will continue to work with Natural England to consider whether specific monitoring needs to be referred to in the DCO/dML.
Document used: [APP-234] Outline Scour Protection and Cable Protection Plan					
G4	Executive Summary, 2.1.2, 3.2.3	Natural England advises that a key consideration is that the type of scour protection used will be removable upon decommissioning. Natural England advises that options that involve introducing plastic to the marine environment have the potential to degrade during the lifetime of the project and raise concerns with regards to marine pollution.		We advise consideration is given to this.	The Applicant notes the issue raised by Natural England and recognises the need to minimise the introduction of plastics into the marine environment where practicable options are available. The Applicant is committed to minimising the release of plastics into the marine environment and commits to using suitable alternatives, where this is practicable, and this has been added to the commitments register as C-288 and will be secured through the **Outline Scour Protection and Cable Protection Plan** **[APP-234]** secured in Condition 11(1)(i) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**). The Applicant notes the point by Natural England on the removability of scour protection and highlights that as set out in section 105(2) of the Energy Act 2004, a decommissioning programme is required, the delivery of which is secured in Requirement 11, Part 3 of the **draft DCO** **[PEPD-009]**, with specific requirements for decommissioning of the Proposed Development being detailed within the programme. The Applicant highlights that the engineering suitability is necessarily the primary consideration, however recoverability will also be an important factor in the selection of the appropriate material for the Proposed Development. The Applicant also notes that the decommissioning plan and programme will be updated during the lifetime of the Proposed Development to take account of changing best practice and new technologies. The approach and methodologies employed at decommissioning will

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					be compliant with the legislation and policy requirements at the time of decommissioning.
G5	1.1.8	Natural England advises that we should be consulted on the final scour prevention and cable protection plan and the requirements for future surveys.		We advise that consultation of Natural England on this plan is stipulated in the DCO.	An **Outline Scour Protection and Cable Protection Plan [APP-234]** has been submitted alongside the Application, with the final Plan submitted to and approved in writing by the MMO as secured in Condition 11(1)(i) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**).
G6	3.1-3.2	We advise the Applicant considers lessons learnt from other wind farm projects alongside those from Rampion 1 in relation to potential scour and cable exposure, particularly around WTG's. This plan should also consider the monitoring from Rampion 1.		We advise that this is considered and evidenced within the plan.	The Applicant notes that Rampion 1 and the Proposed Development are two distinct projects and entities. However, there is ongoing dialogue between the two projects/entities and information generated by Rampion 1 has been and is being taken into account by The Applicant. Regarding Rampion 1 post-construction monitoring data specifically, it is the Applicant's understanding that the reports for the first two years of monitoring have been submitted to the respective discharging authorities in August 2023 and that these have not yet been approved. Therefore, the evidence within such reports is still confidential and not yet in the public domain and as such, should not form the basis for this representation. Additionally, the reports have not yet been signed off by the discharging authorities and are therefore subject to change. The evidence from the Rampion 1 post-construction reports is not yet available for the Proposed Development to include in the ES, due to the reasons mentioned above.
G7	3.2, 3.3.2, Table 3.1, Table 3.2. Table 3.3	We note that the 20% quoted for cable protection seems to be an arbitrary figure across each aspect (inter-array cable, offshore interconnector cable, export cable) and is considerably higher than for all other OWF projects.		We advise that further detail is provided within an updated plan on the information used, including any lessons learnt from Rampion 1, to inform this figure given this will be the maximum allowable amount. We advise that geotechnical data and a Cable Burial Risk Assessment (CBRA) is provided at the consenting phase to further understand the scour and cable protection requirements to ensure that a realistic worst-case scenario is presented.	The Applicant notes the comment from Natural England, however it would highlight in response that the estimate of the proportion of cables potentially requiring some form of secondary protection is not an arbitrary number. The 20% figure quoted is an informed estimate based on the site conditions evident at the Proposed Development site and initial consideration of engineering constraints related to cable routeing and installation. Estimates have sensibly been made on a precautionary basis to ensure that the actual total realised from the Proposed

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					Development will be within the case assessed at the consenting stage, in-line with the design envelope and maximum design (worst-case) scenario approach. The Applicant notes that secondary protection will only be used where necessary as preferentially cables will be buried where possible, as informed by the cable burial risk assessment. Geotechnical information will be collected after consent award, as secured for submission and approval pursuant to Condition 11(1)(n) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**) and will be provided to potential cable installers during the tendering for these works. A technical evaluation of the methods proposed by the tendering parties will be undertaken as the start of the cable burial risk assessment process and used as part of the decision-making process to select the preferred supplier. The Applicant's aim will be to select a contractor who, with their selected equipment and proposed methods, will be able to bury the subsea cables in accordance with the commitments and the mitigation secured through the dML and minimise the likelihood of future cable exposures. This will help the project avoid having to undertake expensive remediation works. The cable burial risk assessment will be completed by the party contracted to undertake these works during the detailed design stage. The Applicant also highlights that the final Scour Protection and Cable Protection Plan will be submitted to and approved in writing by the MMO as secured in Condition 11(1)(i) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**).
G8	Table 3.1	In relation to the figure for 'replenishment during operations (% of construction total) 25%', does this mean 25% of the original 20% put down during construction will need replacing during operation? Furthermore, will this be within the footprint of the protection put down during construction? We also note that this does not allow for any scour/exposure in locations that were not protected at construction. We advise that this seems unlikely, particularly in any areas of mobile sediment. This needs to be clarified.		We advise that further detail is provided within an updated plan on the information used, including any lessons learnt from Rampion 1, to inform this figure given this will be the maximum allowable amount. We advise that geotechnical data and a Cable Burial Risk Assessment (CBRA) is provided at the consenting phase to further understand the scour and cable protection requirements to	Final details regarding cable installation will be provided to the MMO for approval in the cable specification and installation plan secured under Condition 11(1)(n) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**. This plan will be developed once detailed site investigation information has been collected post-consent. The Applicant can confirm that the cable protection replenishment during operations does

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				ensure that a realistic worst-case scenario is presented.	relate to 25% of the original 20% deployed during construction as an estimate, and this may be deployed where required, subject to both the total volume limits set out in the draft DCO and the requirement for cable protection material consented under this DCO is to be deployed within 10 years of commencement of the authorised scheme unless otherwise agreed in writing with the MMO. This has been added to the **draft DCO [PEPD-009])** as condition 2(6) of Schedules 11 and 12. The Applicant refers Natural England to its response to G7 above with regard to the request for geotechnical data and a cable burial risk assessment.
G9	3.4.1	Natural England notes that many different cable protection methodologies are included within the plan; some of which are not conducive to minimising the impact footprint and maximising recovery, as committed to in the mitigation measures. Therefore, we advise that it is critical that engineering decisions include a hierarchy of the different methodologies and their relative environmental impacts, and that these work areas are progressed in tandem. We advise that the options within the outline plan for scour prevention and cable protection should be limited to those options which sufficiently meet both engineering and ecological requirements and this is agreed as part of the consenting phase. Natural England advise that post-installation/decommissioning recovery will need to be demonstrated by monitoring, particularly for methods where full recovery has not been achieved previously in similar sedimentary conditions.		We advise the Applicant refines the scour prevention and cable protection options included within the outline plan prior to consent.	The Applicant highlights that the cable methodologies included in the plan are not a prerequisite and are a contingency measures within the Proposed Development design envelope. A degree of precaution has been built into this assessment. The exact form of cable protection used will depend upon local ground conditions, hydrodynamic processes, and the selected cable protection contractor. This information will be specified in the Final Scour Protection and Cable Protection Plan as secured by Condition 11 (1)(i) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**). When pre-construction surveys to identify local ground conditions have been completed, the different cable protection methodologies will be chosen with specific consideration of the need to limit environmental impacts, including impacts of plastics, as relevant, in accordance with the embedded environmental measures set out in the **In Principle Sensitive Features Mitigation Plan [APP-239]** as secured by Condition 11 (1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]** and the **Commitments Register [APP-254]**. The Applicant would like to maintain the options for the materials used for cable protection works, as set out in the application and defined in the

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					DCO, to enable the most appropriate design solution for the situation which evolves after the initial cable burial methods detailed in the application have been applied. The monitoring proposals for the Proposed Development, as set out within the **Offshore In Principle Monitoring Plan [APP-240]**, have been based on the identification of significant effects within the EIA and no significant effects are predicted to occur as a result of the installation of cable protection material. Where relevant, the Applicant will continue to engage with Natural England to determine whether any additional detail is required within the current in-principle Plan.
G10	3.4.2	It is stated that 'In the inshore area approaching the landfall, duct extensions may be required to enable the landfall Horizontal Directional Drilling (HDD) ducts to be extended further offshore to facilitate cable installation from an installation vessel situated offshore. These duct extensions will be of a similar diameter to the HDD ducts and installed in their own trench at a similar depth of cover to the export cables. The duct extensions will be backfilled before the arrival of the cable installation vessel.' We advise that this does not appear to have been considered within the ES. Natural England would potentially support extension of the HDD further offshore if it could be demonstrated that this would further minimise the loss and damage of habitats, such as irreplaceable chalk. However, in order to understand this, all potential methodologies should be clearly set out and assessed. Especially, as written, there still appears to be significant inconsistencies and uncertainties regarding nearshore installation methodologies.		Natural England advise that this is fully considered in an updated ES. We advise that within the updated plan and/or ES a clear appraisal of consistent options is required. Lessons learnt of the limitations and constraints of constructing in shallow chalk needs to be clearly presented and discussed.	As indicated in the ES, the final construction design for landfall HDD will be determined post-consent and will be based on detailed geotechnical and geological data to develop the final HDD alignment that is in keeping with the Applicant's commitments, including C-269 in the **Commitments Register [APP-254] (**secured by Condition 11 (1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009])**. The Applicant highlights that the relevant activities associated with the installation of HDD ducts comprise the excavation of the trench for the ducts (and subsequently the export cables), which is fully considered within the construction impacts assessment presented, *inter alia*, within the following chapters of the ES: • **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]** – Section 9.9; • **Chapter 8: Fish and Shellfish Ecology, Volume 2 [APP-049]** -Section 8.9; and • **Chapter 6: Coastal processes, Volume 2 [APP-047]** – Section 6.9.
G11	3.4.3	It is stated that where ground conditions are not suitable, the 'construction of temporary sand/gravel beds may be required.'		As per comment above.	The Applicant can confirm that deployment of temporary sand/gravel beds will be effected using

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		We advise this is not what is assessed in the benthic chapter of the ES (where bag material is mentioned). We have concerns regarding the environmental impacts of loose material being placed on the seabed and the ability to retrieve this after the works as required by OSPAR. Additionally, we advise that the grounding of vessels with or without a buffering material under the barge will damage underlying habitats.			bagged solutions; the material used will not be loose sand/gravel. Gravel bags were used to assist with other operations during the construction of Rampion 1. An example of this was through the wet storage of the offshore export cables. As the offshore export cables were laid before the arrival of the offshore substation topside, it was not possible for the export cables to be pulled into the substation. The offshore export cables were wet stored on the seabed for a period of months by using rock bags to hold the cables in place. Once the offshore substation topside has be installed, the rock bags were removed from the export cables, which were then pulled into the offshore substation. At the end of the construction period, the rock bags were removed from the site. In response to Issue Specific Hearing 1 agenda item 46, the Applicant has produced an assessment of temporary gravel beds: **Appendix 13 - Further Information for Action Point 45 and 46 (document reference 8.25.13)**.
Document used: [APP-233] Outline Project Environmental Management Plan (offshore)					
G12	1.1.7	Natural England understand that the final Project Environmental Management Plan (PEMP) will be produced prior to construction and will be developed following the detailed design process. We advise that until these details are fully understood Natural England cannot provide final comment on the suitability of the management measures proposed. Therefore, we advise that a more detail is provided within an updated plan to provide the necessary comfort to the Secretary of State that impacts will and can be sufficiently managed. We advise a holistic approach to the final plan to bring together all agreed measures across the ES and to ensure that the contractor is fully aware of all commitments.		We advise that an updated plan is submitted into examination and that Natural England are consulted on the final version prior to construction.	The Final Project Environmental Management Plan will be completed post-consent and will be based on detailed design and construction information. The Applicant notes that the Plan will be submitted to and approved in writing by the MMO as secured in Condition 11(1)(d) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**). The Applicant will continue to engage with Natural England to develop aspects of the **Outline Project Environmental Management Plan [APP-233]** of relevance to this stage of the consenting process.
G13	Appendix A Outline Marine Pollution Contingency Plan	We advise that pollution incidents, reports, and situation updates should be emailed to the Natural England Marine Incidents Mailbox:marineincidents@naturalengland.org.uk. We advise that Appendix A is primarily a list of headings, with the details to be included in the final plan. Therefore, we cannot comment on the suitability of the measures to be included.		We advise this contact is added to the plan. We advise that an updated plan is submitted into examination and that Natural England are consulted on the final version prior to construction.	The contact email address suggested by Natural England has been added to the Errata submitted at Deadline 1. The Final Marine Pollution Contingency Plan will be determined post-consent, will be based on detailed design and construction information, and submitted to and approved in writing by the MMO

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					as secured in Condition 11(1)(d) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**). The Applicant will continue to engage with Natural England to develop aspects of the **Outline Project Environmental Management Plan** **[APP-233]** of relevance to this stage of the consenting process.
G14	Appendix J Marine Biosecurity Plan	We advise that until this plan has been produced, we cannot comment on the suitability of the measures to be included.		We advise that an updated plan is submitted into examination and that Natural England are consulted on the final version prior to construction.	The Final Marine Biosecurity Plan will be based on detailed design and construction information and submitted to and approved in writing by the MMO as secured in Condition 11(1)(d) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**). The Applicant will continue to engage with Natural England to develop aspects of the **Outline Project Environmental Management Plan** **[APP-233]** of relevance to this stage of the consenting process.
Document used: [APP-238] Outline Offshore Operations and Maintenance Plan					
G15	1.1.1	Natural England understands that this is an outline plan, which will be developed post consent. We advise that clarity should be provided regarding how the potential impacts of the finalised plan will be checked against the assessments made in the ES, MCZ Assessment, HRA etc. We advise that sufficient information should be provided at the pre- consent stage to allow operations and maintenance (O&M) activities to be fully assessed.		We advise that this plan is developed further pre-consent to provided sufficient certainty in the accuracy of what is included in the assessments.	Operations and maintenance activities have been fully assessed throughout the assessments in the Environmental Statement and suitably precautionary levels of operations and maintenance activities have been incorporated into the maximum design scenarios set out in each respective assessment. The Applicant therefore considers the OOMP to be adequate without further revision. For the purposes of clarity, the assessment presented in **Chapter 8: Fish and Shellfish Ecology, Volume 2** **[APP-049]** includes consideration of the potential for direct disturbance resulting from operations and maintenance within the array area and the offshore cable corridor as a result of operations and maintenance activities at the Proposed Development, as detailed in **paragraphs 8.10.88 et seq.** of **Chapter 8: Fish and Shellfish Ecology, Volume 2** **[APP-049]**, making reference

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					to the assessment presented for the same impacts arising from construction. The assessment presented in **Chapter 9: Benthic Subtidal and Intertidal Ecology, Volume 2 [APP-050]** includes consideration of the potential for indirect effects (SSC and deposition) on the MCZs as a result of operations and maintenance activities at the Proposed Development, as detailed in **paragraphs 9.10 6 to 9.10.12** of **Chapter 9: Benthic Subtidal and Intertidal Ecology, Volume 2 [APP-050]**, making reference to the assessment presented for the same impacts arising from construction. The assessment presented in **Chapter 12: Offshore and intertidal ornithology, Volume 2 [APP-053]** includes consideration of the potential for impacts to arise during operations and maintenance activities that could affect birds, which also follows through to relevant aspects for the HRA, as set out in the **Report to Inform Appropriate Assessment [APP-038],** alongside **Chapter 11: Marine mammals, Volume 2 [APP-052]** with regards to marine mammals.
G16	2.1.2	Whilst an 'additional Marine License may be required where works exceed those assessed within the ES or described within the DCO', we advise that all reasonably predictable activities should be considered within the ES at the pre-consent stage, and sufficient data should be gathered to avoid the need for further licences unless something unpredictable comes up. The Applicant should be aware that depending on the situation a non-material or material amendment to the DCO/dML may be required. In relation to unpredictable works, we advise that the Applicant seeks to understand what may have been required on other offshore wind projects to date, alongside lessons learnt from Rampion 1, to inform their predictions at the pre-consent stage. We also advise including a definition of what constitutes emergency work.		Natural England advise that sufficient information needs to be gathered at the consenting stage, to minimise the requirements for unexpected further licences.	The Applicant can confirm that all reasonably predictable activities have been considered in the Environmental Statement. Only two items in Appendix A of the **Outline Offshore Operations and Maintenance Plan [APP-238]** fall into the amber category of *'additional Marine Licence may be required where works exceed those assessed within the ES or described within the DCO':* • Cable repair/ replacement • New cable protection For cable repair/ replacement a maximum number of 4 cable repairs/replacement have been allowed for export cable repairs and a maximum of 6 for array cable repairs these numbers are considered suitably precautionary and are unlikely to be exceeded. The Applicant notes Natural England's comments on material or non-material changes to a DCO.

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G17	Appendix A	In relation to cable repair/replacement/new cable protection, we advise that the Applicant seeks to gather sufficient information to give confidence that the ES assessment is as accurate as possible. We advise this includes gathering and considering geophysical and geotechnical information, as well as consulting requirements from other projects (including Rampion 1) for similar sedimentary conditions.		We advise further information is provided and lessons learnt from Rampion 1 should be considered in relation to export cable cables not functioning immediately after installation.	Geophysical data for the extent of the array area and the export cable corridor and limited geotechnical data in the array area have been collected. Figures illustrating the results of the geophysical surveys may be found in **Appendix 6.1: Coastal processes technical report Baseline description, Volume 4 [APP-121]**. Data types include: bathymetry (**Figure 6.1.11**); interpreted bedfrom distribution (**Figure 6.1.12**); interpreted sediment type (**Figure 6.1.18**); isopach thickness of surficial sediment horizons (**Figure 6.1.19**). Geotechnical information will be collected after consent award and will be provided to potential cable installers during the tendering for these works. A technical evaluation of the methods proposed by the tendering parties will be undertaken as the start of cable burial risk assessment process and used as part of the decision-making process to select the preferred supplier. The aim of the project will be to select a contractor who, with their selected equipment and proposed methods, will be able to bury the subsea cables in accordance with the commitments and the mitigation secured through the dML and minimise the likelihood of future cable exposures. This will help the project avoid having to undertake expensive remediation works. The cable burial risk assessment will be completed by the party contracted to undertake these works during the detailed design stage.
G18	General Comment	We advise undertaking required monitoring and recording and in turn this should be used to inform 5 yearly reviews of the activities, which Natural England wish to be consulted on. We advise that deployment of scour/cable protection under the DCO should be within the first 10 years from commencement of operations.		We advise this is stipulated and is a condition of the DCO/dML.	The **Outline Operations and Maintenance Plan [APP-238]** will be developed post consent and will incorporate the monitoring commitments set out in the Environmental Statement. The monitoring proposals for the Proposed Development are set out within the **Offshore In Principle Monitoring Plan [APP-240]** and have been based on the identification of significant effects within the EIA and no significant effects are predicted to occur as a result of operations and maintenance activities. Where relevant, the Applicant will consider whether, in light of Natural England's detailed advice at Deadline 1, any

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					additional detail is required within the current in-principle Plan. The Applicant confirms that the requirement for cable protection material consented under this DCO is to be deployed within 10 years of commencement of the authorised scheme unless otherwise agreed in writing with the MMO. This has been added to the **draft DCO [PEPD-009])** as condition 2(6) of Schedules 11 and 12. The Applicant would question the need for, or merit of, undertaking 5 yearly reviews of activities for an OWF project. Whilst this may be relevant for activities that have a continuing and accumulative effect on the receiving environment, such as marine aggregate dredging, for which such a review cycle is in place (and from which the Applicant assumes the suggestion derives), this review is targeted at ascertaining the effects of such ongoing impacts to seabed habitats as well as serving to require confirmation of remaining resource depths etc. This is not comparable to the nature of impacts arising through the lifetime of an OWF. The Applicant would also highlight that appropriate notifications and reporting of activities is also set out within the dMLs, in line with other consented OWF projects.
G19	General Comment	Where seabed disturbance is necessary and use of equipment such as jack-up barges is required, the Applicant should provide details showing how they will ensure that sensitive features (as identified in the benthic and fish ecology chapters), will be avoided. This is particularly pertinent to activities that could directly disturb ephemeral features such as *Sabellaria spinulosa* and inter annual variation of black bream nests. We advise that the pre- construction data (greater than 24 months old) will not be sufficient to inform micrositing of activities during the O&M phase. We advise that consideration needs to be given to ongoing data collection required to inform micrositing of activities during the lifetime of the project		We advise this is considered and further details provided as part of the consenting phase	The Applicant has provided its approach to minimising permanent loss of sensitive features within the **In Principle Sensitive Features Mitigation Plan [APP-239]**, with the intention to microsite to avoid impacts in the first instance and subsequently the use of specialist equipment to minimise impact footprints in such areas where full avoidance is not possible. The final Plan will be submitted to and approved in writing by the MMO, as secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009])**. Alongside the Cable Specification and Installation Plan, Condition 11(1)(n) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**), both of which will draw upon the cable burial risk assessment.

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					The Applicant will consider this further in the next iteration of the Outline Offshore Operations and Maintenance Plan at Deadline 3. Whilst the Applicant notes the comments on the age of the site-specific data, this is only relevant for certain ephemeral features, such as certain forms of *Sabellaria* habitat, for which detailed pre-construction surveys will be conducted, as set out in the **Offshore In Principle Monitoring Plan [APP-240]**, the delivery of which is secured in Condition 11(1)(j) of the dMLs (Schedules 11 and 12 of the **draft Development Consent Order (DCO) [PEPD-009]**). Condition 16 (2)(b) makes specific reference to the need for the survey secured under Condition 11(1)(j) to provide for the identification of the locations of, *inter alia*, *Sabellaria spinulosa* reef features. The pre-construction survey data will ensure provision of an appropriately contemporary dataset (i.e. less than 2 years old) with which to finalise any required micrositing to avoid such features, should these be found to comprise 'reef' rather than ephemeral crust habitats. These micrositing provisions will apply to the construction phase and, therefore, also include control over the locations of spud legs for jack-up barges, where these are used, and through the operations and maintenance phase of the Proposed Development where relevant, although it should be noted that as a result of the construction phase micrositing, the Applicant would anticipate that infrastructure would already be separated from sensitive habitat features thus reducing the potential for impacts to arise on such receptors during operations and maintenance works. The Applicant does not agree that there is a requirement for ongoing data collection to inform such micrositing as the need for such would be determined by the requirement to undertake works (which require jack-ups or cable de-burial/re-burial) rather than relying upon widescale data collection throughout the lifespan of the project. During the operations and maintenance phase, where geogenic or non-ephemeral sensitive habitats have been identified, the

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					Applicant would assert that the pre-construction data would provide for such micro-siting throughout the operational lifespan of the Proposed Development, however where locations have been recorded as supporting biogenic or ephemeral habitats, then a targeted survey would be undertaken ahead of such works if an extant dataset less than 2 years old is not available.
G20	General Comment	Natural England would support reburial where exposure has occurred, or where cable repair/replacement is required, over the placement of rock protection. This would potentially allow recovery following reburial, whereas the addition of scour protection would lead to permanent habitat change/loss.		We advise that the Applicant includes a cable burial hierarchy which make reburial the priority.	A Cable Specification and Installation Plan will be produced post consent (as secured in Condition 11(1)(n) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**) which will include proposals for monitoring offshore cables including cable protection during the operational lifetime of the authorised scheme, this includes a risk-based approach to the management of unburied or shallow buried cables. An assessment of seabed disturbance as result of cable maintenance/ repairs, including the placement of rock protection, has been incorporated into Section 9.10 of **Chapter 9: Benthic, Subtidal, and Intertidal Ecology [APP-050].** The impacts from these works will be spread over the approximate 30-year period of operation and maintenance activities, with only a limited number of activities occurring within any one year. As such, the magnitude of temporary habitat disturbance from jack-up vessels and cable maintenance activities relating to the Proposed Development will have on benthic subtidal receptors is considered to be minor, indicating that the disturbance of habitat does not threaten the long-term viability of the benthic resource within the proposed DCO Order Limits. **Chapter 9: Benthic, Subtidal, and Intertidal Ecology [APP-050]** concludes that no significant effects are expected to occur as a result of cable maintenance/ repairs. Reburial would be the preferred method to remedy cable exposure, where ground conditions, hydrodynamic processes, and the selected cable protection contractor allow. The environmental

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					impacts of addressing cable exposure would be determined on a case-by-case basis depending on the nature of the exposure.
G21	General Comment	In line with the commitment to not undertake construction activities in the cable corridor during the sensitive season for black seabream, and the final piling mitigation, which is yet to be agreed, we advise that consideration is given to the impacts of operation and maintenance (O&M) activities. In relation to black seabream, we advise that the Applicant also commits to only undertaking planned O&M activities outside of the sensitive period and that consideration is given to how impacts could be reduced during the sensitive period for any emergency works where a potential pathway for impact is identified. Natural England advise that the potential pathway for impact will depend on the activity and the location. We would have concerns for example should cable repair/reburial/replacement be undertaken in close proximity to the MCZ given the location of known seabream nesting areas. We advise it may be useful to set out a disturbance management plan, which sets out parameters of certain areas and when Natural England might need to be reconsulted for more significant activities in sensitive locations.		We advise that this needs to be considered further by the Applicant. And a clear definition of what constitutes emergency works should be presented. We advise that a disturbance management plan should be consider in relation to O & M activities in sensitive areas.	The Applicant can confirm that scheduled cable maintenance activities in close proximity to the Kingmere MCZ will not be undertaken during the sensitive season for black seabream. Where emergency works are required, the Applicant proposes the same definition for 'emergency' as adopted by the MMO in its statutory guidance note, Marine Licensing exempted activitieswhere, in the context of the Article 34 exemption it states *""Emergency" means a serious, unexpected, and often dangerous situation requiring immediate action".* This text will be added to the next iteration of the **Outline Operations and Maintenance Plan [APP-238]** at deadline 3.
G22	General Comment	We note that there is currently no information on how the impacts of O&M works will be monitored. We advise that clarity is needed on this.		We advise that the Applicant considers this further in an updated plan.	The **Outline Operations and Maintenance Plan [APP-238]** will be developed post consent and will incorporate the monitoring commitments set out in the Environmental Statement. The monitoring proposals for the Proposed Development are set out within the **Offshore In Principle Monitoring Plan [APP-240]** and have been based on the identification of significant effects within the EIA and no significant effects are predicted to occur as a result of operations and maintenance activities. . Where relevant, the Applicant will consider whether, in light of Natural England's detailed advice at Deadline 1, any additional detail is required within the current in-principle Plan. The **Offshore In Principle Monitoring Plan [APP-240]** provides a framework for further discussions post consent with the Marine Management Organisation (MMO) and the relevant bodies to agree the exact detail (timings,

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					methodologies etc.) of the monitoring that is required.

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Table 4-13 Applicant's Response to Natural England - Appendix H (Landscape and Visual Impact)

Ref	Natural England's Comments	Applicant's Response
H1	**Summary of Natural England's Advice** The natural beauty of the SDNP and the opportunities afforded for open-air recreation are the reasons for the National Park's statutory designation. The Landscape and Visual Impact Assessment (LVIA) [APP-059] finds that the onshore cable route will cause short term, temporary harm to two of the SDNP special qualities during the construction phase of the proposed development. Natural England advises that any harm to the natural beauty harms the purpose of the designation, and this cannot be reduced by claiming that the effect is limited in any way. The LVIA relies on a number of embedded mitigation measures to support the final conclusion that there will be no residual effects on the SDNP and on its special qualities, setting or integrity, while the construction phase effects on the National Park are assessed as significant, temporary and largely reversible. There are two key embedded mitigation measures which underpin the assessment in the LVIA: trenchless crossings for through the chalk scarps at Michelgrove Park and Sullington Hill and the translocation of sections of field boundary hedgerows or replacement planting (commitment C-115). A third key commitment which supports commitment C-115, C-19 is that of a rolling programme of reinstatement to field boundaries. Natural England advises that the application documents do not put forward sufficient and credible evidence in relation to these key mitigation measures to justify the assessment of significance in the LVIA. The geology of the SDNP and in particular the chalk scarps are one of the key reasons for the National Park's designation. The scarps are therefore of the highest landscape and visual sensitivity. If the scarps were crossed using an open trench method, there would be significant, permanent harm to the natural beauty of the SDNP and its landscape character; there would also be harm to Ancient Woodland which is irreplaceable in planning policy. HDD is the most important component of the mitigation programme for the proposed scheme in relation to landscape, given the very high sensitivity these landscape features, and the LVIA conclusion of no residual landscape and visual effects on the SDNP or its special qualities is based upon this mitigation measure. However, no detailed studies have been undertaken on the suitability of the ground conditions for the use of HDD or how the technique will accommodate each of the scarp's changes in topography without resulting in damage to the scarps. All feasibility further work on HDD is proposed in stages once the DCO has been approved. There is a substantial risk that construction could be underway through the SDNP before it is found that site conditions will prevent HDD proceeding through one or both of the scarps. Moreover, none of the embedded mitigation commitments [APP-254] state that the chalk scarps will be protected by trenchless crossings. Natural England advises that without a clear commitment to protect the chalk scarps, and detailed design and all site investigation works being undertaken prior to commencement of the construction of any part of the cable route through the SDNP, the SDNP landscape will be placed at substantial risk of long term, permanent harm. The removal of field boundary tree lines and hedgerows along the cable route of the SDNP has the potential for lasting change to the landscape character of the National Park, as can be seen in sections of the Rampion 1 cable route. Commitment C-115 aims to reduce the effect of field boundary removal on the landscape of the National Park by translocating sections of hedgerows along the route and reinstating them or replacing them with new planting. Hedgerow translocation is another of the key measures used to substantiate the assessment that the effects on the SDNP special qualities and on the landscape and visual amenity of the	As this is a summary of the relevant representations from Natural England, the individual points are responded to by the Applicant in the responses below.

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	area will be temporary and reversible. Irrespective of the success of commitment C-115, there will be long term changes to the structure of the SDNP landscape as no trees can be returned/replanted over the cable route. No evidence has been provided that translocation will be effective for the soil and climactic conditions of the SDNP and the commitment wording contains a number of caveats in relation to its implementation. As a Page 4 result of the uncertainty of this commitment and the loss of field boundary trees, Natural England advises that the effects of the cable route on the landscape features of the SDNP have been under assessed in the LVIA. Commitment C-19 aims to support commitment C-115. Throughout the LVIA reference is made to reinstatement of hedgerows occurring at 600m to 1,000m intervals, while the actual commitment to interval length is for joint bays/pits at this interval while the commitment to reinstatement is in as shorter a timeframe as possible. Natural England advises that due to the substantial lack of credible and detailed evidence, the assessment of effects as set out in the LVIA cannot be relied upon, and that there will be significant residual adverse landscape and visual effects on the SDNP and on its special qualities, setting or integrity.	
H2	**South Downs National Park - Statutory Purposes and Special Qualities** 1.1 The primary statutory purpose of the South Downs National Park (SDNP) is the conservation and enhancement of natural beauty, wildlife and cultural heritage. This is underpinned by national planning policy as set out in NPS EN-1 (see paragraph 5.9.9), and locally in SDNPA Policy 1, which aims to 'conserve and enhance the natural beauty and special qualities of the landscape and its setting'. 1.2 Unless otherwise noted, the comments within this section relate to APP-169 Volume 4, Appendix 18.3: Landscape Assessment. 1.3 Section 3.3 of Appendix 18.3: Landscape Assessment aims to assess the '… effects of the onshore elements of the Proposed Development on the natural beauty of the national park which are encapsulated by the SLQs [special qualities] as well as the setting and integrity of the designation' (para. 3.2.4, Assessment Methodology). The assessment considers three of the SDNP special qualities as being potentially affected by the proposed development: Special Quality 1: diverse, inspirational landscapes and breath-taking views; Special Quality 3: tranquil and unspoilt places Special Quality 5: great opportunities for recreational activities and learning experiences. 1.4 In relation to Special Quality 1, 'diverse, inspirational landscapes and breath-taking views' the Landscape Assessment concludes that the cable corridor and the associated trenchless crossing compounds will have short-term, temporary major to moderate and significant effects on the landscape character of the SDNP, as well as on adjoining landscapes to the north which define the setting of the National Park, limited to the construction phase. As set out in paragraphs 3.3.44 to 3.3.46 these assessed effects are considered to be limited in geographical extent (between 250m and 650m from the cable corridor) and their duration reduced by the embedded mitigation measure of a rolling programme of backfill. A similar assessment is made in terms of Special Quality 3, 'tranquil and unspoilt places'. 1.5 In relation to Special Quality 5, 'great opportunities for recreational activities and learning experiences', the assessment finds the effect to be minor and not significant, although it is noted that the individual PRoW which are directly or indirectly affected by the works '… are significantly affected on an individual and local basis.' (para. 3.3.71).	As this is a summary of the relevant representations from Natural England, the individual points are responded to by the Applicant in the sections below.

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	1.6 Natural England advises the following in relation to the assessment of the effects on the special qualities, and thus the effect of the proposed development on the statutory purpose of the designation.	
H3	1.7 There is an incorrect reliance on the mitigating effect of geographic extent on the assessed harm to the special qualities. For 'diverse, inspirational landscapes and breath-taking views' and 'tranquil and unspoilt places' the effect is considered to be limited to '…approximately 250m to 650m of the onshore cable corridor…', while in the case of 'great opportunities for recreational activities and learning experiences' a quantitative measure is applied to the extent of the effect. 1.8 While for the assessment of landscape effects, GLVIA sets out the need to consider geographical location as part of an assessment of magnitude of change, for the assessment of the special qualities and thus the assessment of effects on the statutory purpose of a designated landscape, the extent of geographical harm is irrelevant. The assessment finds that the special qualities of the SDNP will be harmed. The natural beauty of the National Park and the opportunities afforded for open-air recreation are the reasons for which it was designated in statute. Any harm to the natural beauty harms the purpose of the designation, and this cannot be moderated by a quantitative judgement about the size or scale of the harm in relation to a particular part of the SDNP or to any of its special qualities. We would advise reference be made to the designating legislation. In addition, the irrelevance of geographical effect was understood and set out by the Examining Authority in the Navitus Bay Wind Park case in June 2015[1]. We conclude that the primary statutory purpose of the SDNP, to conserve and enhance natural beauty, is harmed by the proposed development as described in the ES.	Further detailed information and guidance from Natural England is needed to support this relevant representation. The Landscape and Visual Impact Assessment (LVIA) in **Chapter 18: Landscape and visual impact, Volume 2** of the Environmental Statement (ES) **[APP-059]** has correctly assessed the landscape and visual effects in accordance with Guidelines for Landscape and Visual Impact Assessment 3 (GLVIA3) (Landscape Institute and Institute of Environmental Management and Assessment (IEMA), 2013). The inclusion of geographical extent is a requirement of GLVIA3 (Landscape Institute and IEMA, 2013) to define the nature of these effects and has been supported by site survey and photography. The Applicant has identified significant levels of effect on the special qualities (SQs) in **Appendix 18.3: Landscape Assessment, Volume 4** of the ES **[APP-169]**. Further clarification on special qualities including reference to the designating legislation is provided in **Appendix 5 – Further information for Action Point 27 – South Downs National Park (Document Reference: 8.25.5)** submitted at Deadline 1.
H4	1.9 The significant effects on Special Qualities 1 and 3 are set out as being short term and temporary, limited to the construction phase and largely reversible due to the mitigation measures proposed. While Natural England welcomes these measures, we do not agree with the assessment for the following reasons: Special Quality 1: 'diverse, inspirational landscapes and breath-taking views' a) In relation to Special Quality, it is noted in paragraphs 3.3.38-3.3.40 that planting will be undertaken in years 1 to 10, and that '…localised and significant effects on particular landscape elements (trees, woodland and hedges) will be sustained through Years 1 to 10 reflecting the loss of mature trees, woodland and hedges that cannot be replaced in Year 1.' It is assumed that these localised effects will be considered in isolation and that; '…will not be sufficient in number, density, pattern or distribution to sustain significant effects on landscape character. There will be no obvious 'linkage' between them due to the reinstatement of the onshore cable corridor.' b) Natural England does not agree with this statement. The experience of the landscape and breath-taking views of the SDNP are enjoyed by being in the landscape, whether by means of walking, cycling, horse riding or other pursuits. The landscape is therefore experienced in an active, mobile, and sequential way. Prior to construction commencing preparatory works will be undertaken which will; 1 Navitus Bay Wind Park Examining Authority's Report of Findings and Conclusions and Recommendation to the Secretary of State for Energy and Climate Change, 11 June 2015 (File Ref EN010024), Navitus Bay Wind Park | National Infrastructure Planning (planninginspectorate.gov.uk) accessed 26.10.23	1.9 a) is covered under the related matter 1.9 d) below. 1.9 b) **Chapter 18: Landscape and visual impact, Volume 2** of the Environmental Statement (ES) **[APP-059]** and assessment of special qualities (SQs) draws from the methodology and detailed assessment set out in: • **Appendix 18.1: Landscape and visual impact assessment methodology, Volume 4** of the ES **[APP-167]**; • **Appendix 18.2: Viewpoint Analysis, Volume 4** of the ES **[APP-168]**; • **Appendix 18.3: Landscape Assessment, Volume 4** of the ES **[APP-169]**; • **Appendix 18.4: Visual Assessment, Volume 4** of the ES **[APP-170]**; • **Appendix 18.5: Residential Visual Amenity Assessment, Volume 4** of the (ES) **[APP-171]**; and • **Appendix 18.6: Viewpoint directory, Volume 4** of the ES **[APP-172]**. This includes sequential assessment of routes through the landscape (public rights of way (PRoW) and National Trails) by means of walking, cycling or horse riding and covers a range of varying landscape and visual effects that will occur during the construction phase and operation and maintenance phase as set out in the summary tables 18-40 to 18-46 of **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**.

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	'…include vegetation clearance, access road construction, installation of drainage systems, stone fill, installation of a construction compound, temporary site offices, fencing, delivery of materials, plant, machinery and fuel' (para. 4.5.56, Chapter 4: Proposed Development) c) In addition, up to 66 joint bays, and 264 separate link boxes and fibre optic cable junction boxes are proposed. Commitment C-19 refers to route joint bays/pits at 600m to 1,000m intervals, which will extend along the full length of the route. These will not only have an industrialising effect on the landscape, but it is likely that they will be fenced as they are along the Rampion 1 cable route. All of these new alien features will all act to highlight the route to those who move through the landscape of the National Park. The localised and significant effects will be experienced therefore, not as isolated incidents, but as significant construction works traversing through and detracting from the South Downs landscape and breath-taking views; they will be clearly sequential. This would be particularly evident in the A3: Arun to Adur Open Downs landscape character area, where it would significantly change the character of this open downland landscape and damage its natural beauty for more than 10 years which in LIVA terms is long term. d) Paragraph 3.3.38, which relates to the state of the landscape at the end of the construction phase, notes that as a minimum the fencing and haul roads will be removed and that topsoil and, where required, grass/pasture will be reinstated. The planting will be undertaken between years 1 and 10, and therefore the users of this landscape will experience changes to it for at least 10 years, if not longer as the planting in year 10 will need time to establish (again this is long term as set out in the LVIA). In addition, no trees removed for the cable route can be replaced over the route. As a result there will be permanent changes to the structure of field boundaries and thus patterns in the landscape which will continue to provide a visual indicator of the route of the cable for the long term. The Rampion 1 cable route remains visible in several of the sections, in particular around Truleigh Hill area. e) We would therefore consider that significant effects on the landscape of the SDNP and its special qualities are under assessed. Effects will extend for at least the medium term (6 to 10 years based on the LVIA methodology) into the operation and maintenance phase, with permanent effects lasting longer than 10 years. These comments are notwithstanding our considerable concerns in relation to embedded mitigation measures (C-19, C-115, C235, C-236) as set out below. Special Quality 3: 'tranquil and unspoilt places' f) In relation to Special Quality 3, the LVIA notes that the duration of the construction phase effects will be '…limited to a few days as the works pass through the landscape' (para. 3.3.55). Commitment C-19 sets out to reinstate the landscape in '…as short a timeframe as possible' and to complete the cable installation in discrete sections. While Natural England welcomes this approach and the acknowledgement of the acute contrast with the perceptual character, we do not agree that the effect on the tranquillity of the landscape can be limited to a few days. The cable corridor through the National Park is approximately 12km in length. As set out in Table 1-36 (PRoW along the cable route within the SDNP) the construction phase will continue for 4 years. The tranquillity of the National Park can be experienced in motion, in the same way as views and the diversity of the landscape. The sound of construction in the tranquil landscape will reach further than the visible activity which may be screened from view and movement of construction vehicles and the sound they make will have a significant effect on this special quality. g) SDNP is designated as an International Dark Sky Reserve. Paragraph 3.3.20 states that there would be no effect on this designation due to embedded mitigation measures. Those quoted are: C-22 (sets out working	The preparatory works referred to by Natural England are included in the construction phase. 1.9 c) The joint bays will be unfenced subsurface features, marked by manholes as described in **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**. The landscape and visual impact of these features would not be significant and people travelling sequentially through the landscape would not encounter these in sufficient number / frequency to be significant. 1.9 d) Reinstatement planting will be undertaken within two years of its loss as set out in the **Outline Landscape and Ecology Management Plan (LEMP) [APP-232]**. Landscape and visual effects resulting from reinstatement of hedgerows and trees will be of a different nature and character to those experienced during construction. The young plants will grow and become established over a 5 Year period with maintenance continued until Year 10 with the nature, level and significance of these effects changing and reducing over this period. Consequently, the construction effects are described as short term and temporary, these would be of a different nature and reduced geographical extent during operation. They would also be short-term, temporary and progressively reducing with the exception of those areas where trees cannot be reinstated over the cable trenches. Here, scrub/ small tree species will be planted as reinstatement and it is acknowledged that there would be a permanent change to those affected landscape elements. For those landscape and visual effects extending into the operation and maintenance phase, the changes to landscape elements in terms of age and scale of vegetation will not be sufficient in number, density, pattern or distribution to sustain significant effects on the overall landscape character, sequential experience of travelling through the landscape or the special qualities (SQs). Areas of new planting / altered landscape elements are also a feature of the baseline landscape. 1.9 e) As noted above, whilst the majority of effects will be short-term (less than 5 Years), some effects will extend for up to 10 Years, but covering two distinct phases of development encompassing different nature and scale of effects. Permanent effects resulting from the loss of trees will be mitigated by replanted hedges and smaller native trees constituting a change to the landscape that is not necessarily adverse and / or significant in terms of the landscape character, sequential experience and SQ. 1.9 f) Although some phases of the work (e.g. trenchless crossing) may be completed in a few days and Commitment C-19 in the **Commitments Register [APP-254]** (which has been updated at Deadline 1) sets out to reinstate the landscape in '*…as short a timeframe as possible*', the assessment in **Landscape Assessment, Volume 4** of the ES **[APP-169]** concludes that there

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Ref	Natural England's Comments	Applicant's Response
	hours as 0700 to 1900 Monday to Friday); C-66 Page 7 (minimising effects on the special qualities of the SDNP, through design and compliance with policy) and C-200 (directional task lighting where needed to limit effects on walkers and residents of the SDNP). The Outline Code of Construction Practice (document 7.02) states that Horizontal Directional Drilling (HDD) work will continue for 24 hours, 7 days a week. The detailed description of Special Quality 3 includes the retention of dark night skies. Natural England welcomes the commitments referred to in relation to lighting. However, there is no assessment of the landscape effects of the necessary lighting, that will be needed for the HDD work where the cable extends through the scarp at Michelgrove Park or Sullington Hill. While vehicle and task lighting in relation to the identified viewpoints are mentioned frequently in the Viewpoint Analysis (Appendix 18.2), there is no mention of the lighting needed for the trenchless crossing compounds given their 24 hour, 7 day a week working hours. Similarly, no mention of lighting for trenchless crossing compounds is mentioned in Table 18-24, which sets out the maximum parameters and assessment assumptions for the landscape and visual impact assessment (Chapter 18, p.125-132). Natural England advises that further evidence should be provided to support the conclusion that there is no effect on the dark skies of the SDNP or the South Downs International Dark Sky Reserve.	will be a significant effect on Special Quality (SQ3) because of both audible and visual effects on the landscape and visual resource, experienced by people that will be temporary and short term (up to 5 Years duration). Further clarification on special qualities is provided in **Appendix 5 – Further information for Action Point 27 – South Downs National Park (Document Reference 8.25.5)** submitted at Deadline 1. 1.9 g) The assessment of no effect on the South Downs International Dark Sky Reserve is based on the fact that none of the Dark Skies Discovery Sites or core areas of the Dark Sky Reserve are located within the LVIA Study Area (see Figure 15.12 in **Chapter 15: Seascape, landscape and visual impact assessment – Figures (Part 1 of 8), Volume 3 [APP-088]**). The nearest of these being located beyond 10km distance from the proposed DCO Order Limits. A portion of the onshore cable corridor is however routed through the "*E1a - 2km Buffer Zone & Intrinsic Rural Darkness*" area and as such the recommendations of the South Downs National Park (SDNP) Local Plan Policy SD8: Dark Night Skies have been followed and incorporated into Commitments C-66 (minimise effects on the special qualities of the National Park and High Weald Area of Outstanding Natural Beauty) and C-200 (construction lighting limited to directional task lighting where required) in the **Commitments Register [APP-254]** updated at Deadline 1, These commitments are secured through Requirement 12 (**Outline Landscape and Ecology Management Plan [APP-232]**) and Requirement 22 (**Outline Code of Construction Practice [PEPD-033]**) respectively in the **Draft Development Consent Order [PEPD-009]**. The Applicant will continue to engage with Natural England on these points.
H5	1.10 Commitment C-66 and C-67 are aimed at reducing the effects of the proposed development on the SDNP. While we welcome these in principle, we do not believe that they will have any meaningful effect. C-66 aims to minimise the effects on the special qualities of the National Park '…through careful design consideration in terms of scale, size and location, and taking account of the relevant policy and guidance.' The proposed development is assessed in the LVIA as having a significant effect on two special qualities of the SDNP during the construction phase, and we consider that this extends into the long term. Natural England therefore advises that the natural beauty of the designation will be harmed.	The Applicant will continue to engage with Natural England on these points, but please see the Applicant's response to H4 (1.9 (d)) and the Applicant's **Post Hearing Submission – Issue Specific Hearing 1, Appendix 5 – Further information for Action Point 27 – South Downs National Park (Document Reference: 8.25.5)**. This document provides further information and sign-posting to effects of the Proposed development on the special qualities of the South Downs National Park including mitigation and enhancement proposals. A number of design considerations have already been taken as a result of commitment C-66 and this principle will continue through the stage specific Landscape and Ecology Management Plans (LEMPs) during construction and operation secured through Requirement 12 of the **Draft Development Consent Order [PEPD-009]**.
H6	1.11 Finally, Natural England has significant concerns about the permanent harm to the special qualities of the SDNP as a result of the reliance placed on the HDD crossing embedded mitigation measure which proposes a trenchless crossing method of taking the cable route through Michelgrove Park and Sullington Hill chalk scarps. The landscape and visual effects assessment in the Environmental Statement, and the assessed harm to the special qualities of the SDNP are all predicted upon the success of this mitigation	The chalk scarps are recognised as key landscape characteristics / features and the relevant Local Character Areas (LCAs) are assessed as of High sensitivity in the Landscape and Visual Impact Assessment (LVIA) (see **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**.

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Ref	Natural England's Comments	Applicant's Response
	measure. As set out in more detail below, no studies or further evidence has been provided of its likely feasibility or success.	The Applicant is committed to undertaking ground investigations for all trenchless crossings prior to commencement of the works. This is a standard requirement to inform detailed design of trenchless crossings and is secured in the **Outline construction method statement** **[APP-255]** within section 3.4, which is secured by Requirement 23 of the **Draft Development Consent Order** **[PEPD-009]**. The details of the crossings will be confirmed in the stage specific onshore construction method statement as per **Draft Development Consent Order** **[APP-019]** Requirement 23. Please refer to the Applicant's response in **references J3 and J4** for full detailed response.
H7	**Embedded mitigation measures** **Horizontal Directional Drilling for chalk scarps and Ancient Woodland** 1.12 The geology of the SDNP is quoted in the SDNP Special Qualities document as underpinning the special qualities of the area, and in particular Special Quality 1, 'diverse, inspirational and breathtaking views'. The chalk scarps are one of the most prominent manifestations of the geology of the SDNP, and one of its most sensitive landscape features. The chalk scape faces are a key reason for the area's designated as a National Park. The cable route is designed to cross two scarps within the SDNP; Michelgrove Park and Sullington Hill. In addition to the sensitivity of the scarps, there is a substantial area of Ancient Woodland on the Michelgrove Park scarp and Sullington Hill is a Local Wildlife Site; further increasing the landscape sensitivity of each of these areas. HDD is proposed as the means of crossing each of the scarps.	In addition to chalk scarps, ancient woodland is recognised in **Appendix 18.3 Landscape Assessment, Volume 4** of the Environmental Statement **[APP-169]** of Landscape Character Areas (LCAs) and Special Qualities (SQs) (diversity of landscape and tranquillity / time depth). It is assessed as of High sensitivity.
H8	1.13 Natural England has raised major concerns about the feasibility of the HDD technique since the publication of the PEIR, due to the lack of information on the suitability of the ground conditions for the use of this embedded mitigation measure. We have further concerns regarding how the technique will accommodate each of the scarp's changes in topography without resulting in damage to the scarp. HDD is the most important component of the mitigation programme for the proposed scheme in relation to landscape, because of the potential significant landscape and visual effects on the SDNP as a result of crossing the scarps. The assessment in the LVIA that no residual harm will result from the proposals is entirely predicted upon this mitigation measure. Natural England has advised and continues to advise, that without further information regarding the feasibility of HDD in relation to these scarps, all conclusions with regard to residual landscape and visual effects on the landscape of the SDNP as a consequence of the cable route can only be considered provisional and optimistic. 1.14 While we welcome commitments C-235 and C-236 which aim to use best practice HDD techniques and undertake detailed pre-works, we note that there remains considerable uncertainty regarding the technique, as set out in the references to DCO application documents below.	Please refer to the Applicant's response in **references J3 and J4**.The Applicant has no further comments on this matter at this time.
H9	1.15 In Table 22-6 in the Terrestrial ecology and nature conservation chapter (APP-063), it states that proposed trenchless crossings '…have been visited by a 'no dig' specialist to determine feasibility and the activity within these designated sites confirmed'. However, it is also noted that the width of trenchless crossings are wider to allow for '…uncertainty in ground conditions' (APP-045 para. 4.5.8, ES Volume 2, Chapter 4: The Proposed Development), and paragraph 4.5.26 of the same chapter states: For trenchless crossings, HDD has been assessed in the DCO Application as this is the likely preferred option based on their reduced complexity and relatively low cost compared to other techniques. The detailed methodology and design of the trenchless crossing will be determined following site investigation and confirmed within	Please refer to the Applicant's response in **references J3 and J4**.

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Ref	Natural England's Comments	Applicant's Response
	stage specific Onshore Construction Method Statements including confirmation that there are no new or materially different environmental effects arising compared to those assessed in the ES. 1.16 It is also noted in Table 22-6 in the ecology chapter (APP-063 - 3rd section) that in Chapter 4: The Proposed Development '… the DCO does not consent open trenching methods in areas where HDD is being proposed (should HDD fail additional consent would be required to deliver an alternative solution)'.	
H10	1.17 Natural England also notes that trenchless crossings are mentioned in the Crossings Schedule (APP-122 Volume 4, Appendix 4.1) for Michelgrove Park and Sullington Hill. However, Michelgrove Park is not mentioned in the Commitments register [APP-254] in relation to trenchless crossings and the commitment in relation to trenchless crossings at Sullington Hill is relation to the Local Wildlife Site and not in relation to the chalk scarp (Commitments C-114 and C-278). Across the Rampion 2 DCO documents where reference is made to trenchless crossing techniques (including HDD) its use is set out as being '… to avoid or minimise identified constraints, such as main watercourses, railways and roads that form part of the Strategic Highways Network' (para 1.2.3). This is repeated in several documents, including in Commitment C-5 which refers to main rivers, watercourses, railways and roads. The lack of clear commitments to trenchless crossings for the two most sensitive landscape features within the SDNP, which contribute significant to Special Quality 1, create further uncertainty about the use of HDD to mitigate the effects on the natural beauty of the designated landscape.	Commitment C-5 of the **Commitments Register** **[APP-254]** has been updated at Deadline 1 to note that crossings will be as per Appendix A: Crossing Schedule of the **Outline Code of Construction Practice** **[PEPD-033]** secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. The scarps at Michelgrove (TC-12) and Sullington Hill (TC-15) are shown to be crossed via trenchless crossing techniques.
H11	1.18 Natural England advises that open cut trenching either through the chalk scarps or in areas of Ancient Woodland[3] would leave them irreparably and irrevocably damaged. The combination of topography and the complex soil type of the scarps is anticipated to prevent full reinstatement of the chalk ridges whilst Ancient Woodland is irreplaceable in planning policy terms. This would not only result in significant, permanent and adverse landscape and visual effects during the construction phase of the project, but the inability to remediate the harm caused would result in significant, permanent residual adverse landscape and visual effects. The proposals to undertake site investigations in detailed stages puts the landscape of the SDNP at greater risk of harm. If one or both of the chalk scarps prove unsuitable for HDD. As noted above, an alternative solution would have to be found, and this would most likely occur after construction of the cable route has commenced through the National Park. Natural England advise that in order to protect the landscape of the SDNP, all site investigation works should be undertaken prior to the commencement of the construction of any part of the cable route through the SDNP. Failure to do so would put the SDNP landscape at substantial risk of harm.	Please refer to the Applicant's response in **references J3 and J4**.The Applicant has no further comments on this matter at this time.
H12	1.19 We would further advise that should HDD be deemed feasible, the substantial construction equipment needed for drilling and servicing the drilling operation would significantly threaten the highly sensitive landscape character and the special qualities of the SDNP. The effects will be all the more serious if trenchless crossing alternative option TC-12b [APP-044] is used given its planned location in a clearing within the woodland of Michelgrove Park.	The location of trenchless crossing alternative option TC-12b **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** is located within a woodland clearing at Michelgrove Park for the precise reason of avoiding adverse effects on woodland . Trenchless crossing has been chosen in this location to minimise adverse impacts on woodland. The use of trenchless crossing will be for a temporary period and compounds will be reinstated to their prior condition on completion.
H13	1.20 The chalk scarps are a defining landscape feature of the two landscape character areas where trenchless crossings are proposed (B4: Angmering and Clapham Wooded Estate Downland relating to proposed alternative trenchless crossing TC-12a at Michelgrove Park and A3: Arun to Adur Open Downs where the rest of the trenchless crossings associated with Michelgrove Park and all those relating to Sullington Hill apart from TC-15a). As a result, the landscape effects during the construction phase on these landscape character areas should be Major and Significant, not limited by geographical extent.	Trenchless crossings and associated compounds (TC-12, TC-12a-d and TC-15b-c) are all included in the LVIA for B4: Angmering and Clapham Wooded Estate Downland and A3: Arun to Adur Open Downs as set out in **Appendix 18.3: Landscape Assessment, Volume 4** **[APP-169]**. Both are already assessed as Major adverse and Significant. It is a requirement of Guidelines for Landscape and Visual Impact Assessment 3 (GLVIA3) (Landscape Institute

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		and Institute of Environmental Management and Assessment (IEMA), 2013) that the sensitivity, magnitude and geographical extent is stated.
H14	1.21 We would also request further clarification about the height of the trenchless crossing compounds within the SDNP. The maximum development parameters for these are stated as 50m and 75m (length and width) [APP-124 Volume 4, Appendix 4.3 Proposed Development Parameters, p.6], but there is no maximum height parameter given. The Zone of Theoretical Visibility plans show the height for the cable route as 7m in Figures 18.4a, 18.4b, 18.4c Zone of Theoretical Visibility with viewpoints – Onshore cable corridor (APP-098 to APP-103, Volume 3, Chapter 18, LVIA – Figures (Part 1 of 6)). In Table 18-24 of the LVIA (APP-059, Chapter 18, p.126) it states that the assessment is based on a fully extended mechanical elevator at an 'assumed' height of 6m. We also note the proposed use of a crane during trenchless crossings construction (APP-169, Appendix 18.3: Landscape Assessment, p.57, first paragraph) and would ask for clarification of the height of this equipment. No heights are given in the development parameters for trenchless crossings, and since these define the limits of assessment, we would expect the height parameters to be included as part of the development parameters.	The trenchless crossing compounds are contained within the onshore cable corridor. This outlined in Table 18-24 of **Chapter 18: Landscape and visual impact, Volume 2** of the Environmental Statement (ES) **[APP-059]** which states "*It is assumed that the tallest elements will be the mechanical excavator which has been modelled to a maximum height of 6m (fully extended*)."
H15	**Commitment C-115 [APP-254] 7.22 Commitments Register** 1.22 Commitment C-115 aims to limit the harm caused by cable crossings on hedgerows and tree lines, by temporarily translocating hedgerows ('notching'). In principle Natural England welcomes the commitment to reduce the loss of hedgerows and tree lines using the notching approach and by limiting the sections of hedgerow removed. We also welcome the more realistic wording in this commitment in comparison to that at the PEIR FSIR Commitment **C-19** which aims to construct the cable corridor in discrete sections, with '…reinstatement commencing in as short a timeframe as possible' is also welcomed. 1.23 As mentioned above, the Rampion 1 cable route remains visible in several of the sections. For Rampion 2, Commitment C-115 forms one of the key embedded mitigation measures, alongside those commitments in relation to HDD. It is as a result of these commitments, that the LVIA [APP-059] concludes that there will be no residual effects on the landscape character of the SDNP, and that by year 10, the visual effects will be minor and not significant. Commitment C-115 is relied upon to mitigate the significant visual effects during the operational and maintenance phase on part of the A283 (The Pike), east of Washington and on seven sections of PRoW. 1.24 Natural England raised concerns in relation to the likely efficacy of commitment C-115 in the PEIR SIR and PEIR FSIR consultations, and we advise that we remain concerned as set out below: - Translocated sections of hedgerow would require significant management and maintenance, at each stage of the process to ensure success. In Volume 2, Chapter 22, Terrestrial ecology and nature conservation (APP-063, para. 22.9.102) it is claimed that the technique had an 80% success rate in the Lake District National Park, but there are no further details given of where this was successful and how the technique was undertaken. While the success rate elsewhere is encouraging, we remain unconvinced of the technique's suitability to the SDNP. One of the major factors for failure in the translocation of mature plants is the lack of adequate irrigation. The Lake District receives on average at least twice the level of rainfall than the South Downs, which continues even in the summer months ; and the soil conditions are not comparable. Natural England advises that more information is needed to be convinced of the efficacy of this approach when applied to the SDNP. - Our concerns about the success rate of this embedded mitigation appear to be reflected in additional wording to commitment C-115 (since the PEIR FSIR), which now includes: 'where appropriate' and '… where	1.22 – The Applicant welcomes Natural England's support on the updates to wording of commitments C-115 and C-19 of the **Commitments Register [APP-254]** provided at Deadline 1 submission. Note to ensure further clarity, commitment C-115 has been updated as errata for Deadline 1. 1.23 – The Applicant has no further comments on this matter at this time. 1.24 – It is common landscape and visual impact assessment (LVIA) practice to rely on landscape mitigation and reinstatement to reduce residual effects of development post-construction. The reinstatement of hedges is a credible and robust technique for mitigation. The LVIA has therefore assessed the reinstatement of hedgerows as set out in the **Outline Landscape and Ecology Management Plan (LEMP) [APP-232]** and includes an assessment for those areas where it will not be possible to re-establish trees above the cable corridor. This is documented in **Appendix 18.3: Landscape Assessment, Volume 4** of the ES **[APP-169]**. The **Outline Code of Construction Practice [APP-224]**, commitment C-115 of the **Commitments Register [APP-254]** (provided at Deadline 1 submission) and the assessment in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]** therein describe the approach to hedgerow notching. In response to Relevant Representations, the text for commitment C-115 has been amended to ensure it is easier to understand. The removal of short sections of hedgerow to allow the installation of cables and replanting is a typical approach used on the majority of cabling / pipeline projects the only difference is the extent of the gap, which the Applicant has sought to minimise already by considering what is feasible and proportionate for each individual hedgerow crossing. Further information on this is provided in Annex A of the **Outline Landscape and Ecology Management Plan (LEMP) [APP-232]**. The existence of hedgerows planted and established across the SDNP provides evidence that hedgerows can be established in this area and there is no reason to suppose that new hedgerow plants, planted to

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	chances of success are questionable' mitigation for the loss of hedgerows would be via removal and reinstatement. General uncertainty in relation to ground conditions is evidenced by the widening of the DCO limits in parts of the cable route as noted in ES chapter 4: Proposed Development (APP-045, para. 4.5.8). While the additions to C-115 add a level of realism, they also add to the uncertainty of the success and the likelihood of the use of the measure and suggest that translocation of hedgerows will be less frequently used than was envisaged in the PEIR SIR and PEIR FSIR. This has the effect of turning C-115 into one of replanting removed hedgerows, which we would expect to be the absolute minimum requirement for the loss of field boundary vegetation. - The justification for the decision as to whether or not to translocate the hedgerows will be undertaken by the Ecological Clerk of Works (ECoW), who will ensure '… compliance with relevant legislation, agreed mitigation & best practice' (C-207). We welcome a need to justify the decision and commitment C-196 which aims to '…maintain[ing] levels and types of vegetation and landscape patterns within each Landscape Character Area'. However, there is a strong potential of the landscape and visual effects of decisions being ignored in 4 Based on Met Office UK Climate Averages 1991-2020, considering Keswick and Ambleside and Bognor Regis and Shoreham Airport (these are the closest climate stations to the cable route) Bognor Regis (West Sussex) UK climate averages - Met Office accessed 06.10.2023 Page 11 favour of ecological considerations. Natural England advises that ECoW should be instructed to consider effects on landscape character and visual amenity in all decisions regarding translocation and replacement of hedgerows. 1.25 Natural England advises that for the above reasons the likely efficacy of C-115 is uncertain, and that the commitment can be considered no more than one of replacement planting. The use of commitment C-115 underpins both the assessment of the harm likely to be sustained by the special qualities of the SDNP as well as the landscape and visual assessment of the likely harm to arise from the construction and operation of the cable route. In addition, given the tree planting restrictions along the route, we advise that significant adverse residual landscape and visual effects on the SDNP, and is special qualities will remain beyond year 10 of the operational phase of the scheme, and thus long term. We would therefore conclude that the effects on the SDNP have been under assessed in the LVIA. Commitment C-115 will not prevent the severance of significant numbers of the field boundaries along the cable route, and thus there will be significant harming to the landscape character and visual amenity of the SDNP and its special qualities.	infill gaps in hedgerows that have been notched would not establish in a similar manner to the existing hedges. The **Outline LEMP** **[APP-232]** sets out management and maintenance including replanting should any plants fail. Translocation is a method that would be investigated on a hedgerow-by-hedgerow basis by the Ecological Clerk of Works (ECoW) during the detailed design phase. This would be evidenced and agreed to by the appropriate authorities through the agreement of stage specific Code of Construction Practice and Landscape and Ecology Management Plan documents (secured via Requirements 12, 13 and 22 of the **Draft Development Consent Order** **[PEPD-009]**). The Applicant has altered commitment C-115 (**Commitments Register** **[APP-254]** updated at Deadline 1 submission) so as not to presume translocation at all hedgerows on the advice of stakeholders but is content to use this technique wherever possible. General uncertainty in relation to ground conditions is evidenced by the widening of the proposed DCO Order Limits in parts of the onshore cable route as noted in paragraph 4.5.8 of **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**) is a comment that relates to engineering and not the suitability of soils / ground conditions in respect of replanting and or translocation. The ECoW will be tasked with considering all aspects of each hedgerow during the detailed design including from a biodiversity, landscape and cultural heritage perspective. Please refer to The Applicants response to **reference J30**. 1.25 – The LVIA has assumed as a minimum that the mitigation for vegetation (trees / hedges) lost to the construction works will that take 5 Years to establish regardless of whether it is translocated or replanted and that it will be maintained and monitored for a further 5 Years (10 Years in total). The use of translocation with a similar success rate to the examples provided would ensure a faster establishment such that the LVIA is not under-assessed and the time periods for mitigation (planting establishment, maintenance and monitoring) are not unrealistic and reflect common practice. In respect of claimed significant long-term effects beyond year 10 of the operational phase please see the Applicant's response in **reference H4 (1.9 (d))**.
H16	**Commitment C-19 [APP-254]** 1.26 Natural England welcomes commitment C-19 in principle. Commitment C-19 relates to construction and reinstatement of the cable route being undertaken in discrete sections and for the reinstatement process to be '…commenced in as short a timeframe as practicable'. There are a number of occasions in the LVIA [APP-059] where the excavation and backfill of discrete sections are referred to in relation to 600m to 1000m intervals to reduce the effects of the route on the landscape and ecology (for instance, APP-059 Chapter 18,	The Applicant is reviewing this request made in Natural England's Relevant Representation.

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	p.133 first bullet point, para. 18.11.18, 18.11.87). This is also mentioned in the Outline Code of Construction Practice (APP-224, para. 5.2.4, point 2). However, the wording of the commitment says: 'At regular intervals (typically 600m – 1,000m) along the route joint bays/pits will be installed to enable the cable installation and connection process'. There are no other commitments which mention backfilling on a rolling programme of 600m to 1,000m. There are also no clear indications as to the maximum length of time to be taken before backfilling commences or any indication of the length of cable route to be reinstated within the commitments register. The Proposed Development Parameters do not include mention of a backfilling duration. In addition, the use of the wording 'as practicable' allows for considerable flexibility. In order for this commitment to benefit the route through the SDNP we would advise that a particular duration/length of time is included in the commitments register and the Proposed Development Parameters, and that 'as practicable' is removed from the commitment wording.	
H17	**Avoiding the removal of key characteristics - commitments C-21, C-115, C-174 [APP-254]** APP-059, paragraph 18.7.8, point 6 in Chapter 18: Landscape and visual impact states that commitments C-21, C-115 and C-174 aim to '…avoid the removal of landscape elements, particularly where these are key characteristics and [/] or veteran and mature trees'. In the Executive Summary, these commitments are also claimed to reduce or remove significant environmental effects as far as possible. The Outline Code of Construction Practice [APP-224] also includes a reference to the avoidance of landscape elements where these are key characteristics (APP-224, para. 5.2.4, point 3). While measures to protect important hedgerows are welcomed by Natural England in commitment C-115, as is the protection of veteran trees in commitment C-174, commitment C-21 relates to vegetation removal in the context of breeding birds. Natural England accepts that commitment C-115 may, if successful protect the landscape elements which are key characteristics. However, as set out above we are unconvinced of the feasibility and efficacy of this embedded mitigation measure and therefore request further information as to how commitments C-21, C-115 and C-174 fulfil the suggested environmental protection.	See response in **reference H15** above regarding commitment C-115. In respect of commitment C-21, the commitment refers to any vegetation removal will be undertaken in line with British Standard (BS) 5837:2012 (Trees in relation to design, demolition and construction). This standard will help secure appropriate landscape management during the construction works. Commitment C-174 is regarding veteran trees and details how these will be protected.
H18	**LVIA Methodology [APP-167]** (Comments relate to APP-167, Appendix 18.1: Landscape and visual impact assessment methodology) 1.28 The methodology for the assessment of significance of effects is set out in section 1.8 and Table 1-5 of the LVIA methodology. Paragraph 1.8.3 sets out the instances when a landscape or visual effect is deemed significant. It notes that 'moderate' levels of effect may or may not be judged as significant and would be subject to the assessor's opinion. Natural England notes that the guidance provided in GLVIA3 relates to the general assessment of landscape and visual effects but does not give details of how to assess designated landscapes. Based on the national importance of designated landscapes and their protection in statute, we would advise that a 'moderate' effect in the context of a designated landscape is considered significant.	The landscape and visual receptors of national importance are all assessed as of High sensitivity in **Chapter 18: Landscape and visual impact, Volume 2** of the Environmental Statement **[APP-059]** (and associated appendices in **APP-167 – APP-172**) meaning that a 'Moderate' effect can only result from a low magnitude of change. It is for the assessor to then consider if identified Moderate effects are Significant in line with the methodology outlined in **Appendix 18.1: Landscape and visual impact assessment methodology, Volume 4** of the ES **[APP-167]**.
H19	**Visualisations** 1.29 In principle Natural England welcomes the visualisations provided as supporting evidence. We note that the LVIA methodology states that the viewpoint photography which supports the LVIA has been developed based on the guidance set out in Landscape Institute TGN 06/19 (LI TGN06/19). However, they are labelled Type 1 Visualisations, which the guidance in APP-167, paragraph 3.5.2 refers to as 'annotated viewpoint photographs'. If wireframe/wirelines follow the protocols as set out in the LVIA Methodology (APP-167, Appendix 18.1 paragraphs 1.10.17 and 1.10.18), the visualisations should be labelled as Type 2 visualisations according to the guidance. Natural England asks for clarification that the viewpoint images as presented are Type 2 visualisations and all follow the protocols for wireline/wireframe production set out in the methodology.	The landscape and visual impact assessment (LVIA) visualisations are annotated photos (Type 1) and not wirelines (Type 2). The wirelines and photomontages are presented as part of the seascape, landscape and visual impact assessment (SLVIA) in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** and supporting Figures **[APP-088 – APP-095]**.

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H20	**Cultural Heritage and landscape** 1.30 The accepted definition of landscape is an area of land '… as perceived by people, whose character is the result of the action and interaction of natural and / or human factors.' The definition highlights that landscape has a long temporal dimension, and its current state is the result of millennia of changes to the landscape, both human and naturally induced. Any harm to the cultural heritage of the landscape will result in harm to the landscape character, and therefore any damage to the cultural heritage of the SDNP would significantly damage the landscape character of the National Park. We defer to Historic England and the Local Authorities to comment on the historic environment part of the application.	The Applicant disagrees that "*Any harm to the cultural heritage of the landscape will result in harm to the landscape character, and therefore any damage to the cultural heritage of the SDNP would significantly damage the landscape character of the National Park*." Effects on cultural heritage and LVIA are assessed differently and an effect on cultural heritage may or may not also have a similar or different effect on the landscape resource.

Detailed Comments

Ref	Section	Natural England's comments	RAG	Recommendations	Applicant's response
Document Used: [APP- 059] 6.2.18 Environmental Statement - Volume 2 Chapter 18 Landscape and Visual Impact					
H21	[APP-059] Chapter 18, and associated documents - general	No feasibility studies are presented for the proposed use of the HDD technique for the trenchless crossings of the chalk scarps. The chalk scarps are one of the most sensitive landscape features of the SDNP and one of the reasons for its designation as a National Park.		Undertake all site investigations and detailed studies for the HDD works on the chalk scarps prior to the commencement of the works through the SDNP to remove all ambiguity about the technique's likely efficacy. Full pre-commencement ground assessments to be undertaken for both chalk scarps, taking into account their individual ground conditions and topographies.	Please refer to the Applicant's response in **references H6 and H7**.
H22	[APP-059] Chapter 18, and associated documents - general	Michelgrove Park chalk scarp supports substantial areas of Ancient Woodland, a landscape feature of significant time depth. No feasibility studies for HDD have been presented which show that the Ancient Woodland at Michelgrove Park can be protected.		Undertake all site investigations and detailed studies for the HDD work on the chalk scarps prior to the commencement of the works through the SDNP. Full pre-commencement ground assessments to be undertaken for Michelgrove Park chalk scarp, taking into account the Ancient Woodland.	Please refer to the Applicant's response in **references H6 and H7**.
H23	[APP-169] ES Volume 4, Appendix 18.3: Landscape Assessment, section 3.3	Under assessment of the harm to the statutory purpose of the SDNP through the under assessment of the landscape of the SDNP and its special qualities, due to the incorrect application of geographical extent.		Rewrite the assessment of the effects upon on the SDNP, based on the LVIA assessment that the special qualities of the SDNP are harmed.	Please refer to Applicant's response in **reference H7**.
H24	[APP-169] ES Volume 4, Appendix 18.3: Landscape Assessment, section 3.3	No adequate assessment of the effects of the 24/7 lighting required for trenchless crossings at Michelgrove Park and Sullington Hill.		Provide detailed information as to how the Ancient Woodland adjacent to the area proposed for TC-12b can be protected given the substantial equipment which will be needed for the trenchless crossing works.	Please refer to Applicant's response in **reference H4 (1.9g))**.

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Ref	Section	Natural England's comments	RAG	Recommendations	Applicant's response
H25	[APP-059] Chapter 18, And associated documents - general	The lack of detailed feasibility studies on trenchless crossings (and HDD) invalidates the assessment in the LVIA that there will be no residual effects on the SDNP and on its special qualities, setting or integrity, as the assessment is not supported by credible evidence.		Provide credible evidence to support the LVIA assessment.	Please refer to the Applicant's response in **references H6 and H7**.
H26	[APP-169] ES Volume 4, Appendix 18.3: Landscape Assessment, section 3.3	Construction landscape effects for the two landscape character areas (LCAs) where trenchless crossings via HDD are proposed (B4: Angmering and Clapham Wooded Estate Downland relating to proposed alternative trenchless crossing TC-12a at Michelgrove Park and A3: Arun to Adur Open Downs where the rest of the trenchless crossings associated with Michelgrove Park and all those relating to Sullington Hill apart from TC-15a) are under assessed, given the defining nature of the chalk scarps as landscape features of these LCAs.		The landscape effects during the construction phase on the two LCAs affected by proposed trenchless crossings via HDD, should be altered to **Major** and **Significant**, not limited by geographical extent.	Please refer to the Applicant's response in **references H6 and H7**.
H27	[APP-169] ES Volume 4, Appendix 4.3 Proposed Development Parameters, p.6; [APP-098, APP-099, APP-100, APP-101, APP-102, APP-103] Figures 18.4a, 18.4b, 18.4c Zone of Theoretical Visibility with viewpoints – Onshore cable corridor (Volume 3, Chapter 18, LVIA – Figures (Part 1 of 6); Table 18-24 (LVIA, Chapter 18, p.126)	Lack of clarity on the height of the trenchless crossing compounds within the SDNP.		Clarification of the heights of trenchless crossing compounds within the SDNP to be added to Development parameters.	Please refer to the Applicant's response in **reference H14**.

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Ref	Section	Natural England's comments	RAG	Recommendations	Applicant's response
H28	[APP-254] 7.22 Commitments Register	No commitment to specifically protect the landscape of the chalk scarps when crossings the scarps using trenchless techniques.		Add a commitment to protect the landscape of the chalk scarps.	Please refer to the Applicant's response in **reference H10**.
H29	[APP-2547.22 Commitments Register - commitment C-115	Under assessment of the effects of the cable route through the SDNP as a result of this commitment, as it underpins the assessment of the likely harm to the special qualities of the SDNP and the landscape and visual assessment of it. A number of significant concerns in relation to the likely efficacy of commitment C-115: • Likely success of proposed translocation, given the soil and climactic conditions of the SDNP; • Uncertain language related to the commitment, diluting it to no more than a commitment for hedgerow replanting; • Decisions regarding translocation assigned to an ECoW.		Provide greater clarification and more information/studies to prove the likely efficacy of the commitment as applied to the SDNP. Instruct the ECoW to consider effects on landscape character and visual amenity in all decisions regarding translocation and replacement of hedgerows.	Please refer to the Applicant's response in **reference H15**.
H30	APP-059] Chapter 18, and associated documents - general	Under assessment of the effects of the cable route through the SDNP due to major concerns of the efficacy of commitment C-115. As a result of the inability to replant trees over the cable route, there will be significant adverse residual landscape and visual effects on the SDNP and is special qualities which will remain beyond year 10 of the operational phase of the scheme, and thus long term.		Reassess effects on the SDNP to take into account the worst-case scenario where no hedgerows are successfully translocated; and the inability of any trees to be replanted over the cable route (which is irrespective of the success or failure of commitment C-115).	Please refer to the Applicant's response in **reference H15**.
H31	[APP-059, APP-254] Chapter 18, and associated documents – general; 7.22 Commitments	Commitment C-19 is used in the LVIA to refer to the reinstatement of hedgerows occurring at 600m to 1,000m intervals. The commitment C-19 refers to interval lengths for joint		Clarify commitment C-19 to include reinstatement in 600m to 1,000m intervals.	Please refer to the Applicant's response in **reference H16**.

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Ref	Section	Natural England's comments	RAG	Recommendations	Applicant's response
	Register	bays/pits only, and to reinstatement as 'in as shorter a timeframe as possible'.			
H32	[APP-059] Chapter 18, and associated documents – general; Chapter 18: Landscape and visual impact, para 18.7.8, point 6; [APP-224] Outline Code of Construction Practice (para. 5.2.4, point 3)	Over statement of the benefits of commitments C-21, [C-115], C-174 in relation to reducing or removing significant environmental effects as far as possible / avoiding the removal of key landscape characteristics.		Further information to be provided as to how commitments C-21 and C-174 fulfil the suggested environmental protection. In relation to commitment C-115, see two lines of comments above.	Please refer to the Applicant's response in **reference H17**.
H33	[APP-059] Chapter 18, and associated documents – general; APP-167] Appendix 18.1: Landscape and visual impact assessment methodology, para. 1.8.3	The LVIA assessment methodology is based on 'moderate' levels of effect being judged as either significant or not significant, subject to the assessor's opinion.		Based on the national importance of designated landscapes and their protection in statute, all 'moderate' effects in the context of a designated landscape should be regarded as significant; and the assessment altered accordingly.	Please refer to the Applicant's response in **reference H18**.
H34	098, APP-099, APP-100, APP-101, APP-102, APP-103] Chapter 18, Figures 1 to 6; [APP-167] Appendix 18.1: Landscape and visual impact assessment methodology, para 3.5.2	The LVIA Figures are labelled as Type 1 Visualisations, however, if they are based on the LVIA methodology and the guidance set out in the Landscape Institute Technical Guidance Note 06/19, they should be labelled as Type 2 visualisations.		Clarification as to whether or not the visualisations follow the wireframe/wireline protocols as set out in the LVIA methodology are required.	Please refer to the Applicant's response in **reference H19**.

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Table 4-14 Applicant's response to Natural England - Appendix I (Seascape, Landscape and Visual Impact)

Ref	Natural England's Position	Applicant's Response
I1	**Summary of Key Environmental Concerns: Seascape, Landscape and Visual Impact** Natural England recognise that a number of iterative changes have been made to the DCO order limits between the PEIR and ES stages. However, whilst accepting that the design changes introduced following the Section 42 consultation have reduced the adverse effects of the scheme on the portion of the South Downs National Park (SDNP) contained within the Sussex Heritage Coast (SHC), we continue to advise that the proposal will significantly affect the statutory purposes of the SDNP and the special character of the SHC, as well as the statutory purposes of the Chichester Harbour Area of Outstanding Natural Beauty (CHAONB) and Isle of Wight Area of Outstanding Natural Beauty (IoWAONB).	The Applicant welcomes the recognition from Natural England that changes were made to the Order Limits between the PEIR and ES stages and that the design changes introduced following the Section 42 consultation have reduced the adverse effects of the Proposed Development on the portion of the SDNP contained within the Sussex Heritage Coast. This reduction in spatial extent of the PEIR assessment boundary (offshore array area) to the Order Limits (offshore array area) is illustrated in **Figure 3.3, Chapter 3: Alternatives - Figures, Volume 3 [APP-075]**. The seascape and visual impacts of the Proposed Development Wind Turbine Generators (WTGs) are assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]**. The Applicant recognises that significant effects on '*breathtaking views'* and '*stunning panoramic views to the sea'* defined in SDNP Special Quality 1 (SQ1) have been identified from representative viewpoints in the SDNP. However, the Proposed Development does not have significant effects on any other SDNP special qualities, and it is the conclusion of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056] (paragraphs 15.15.9 – 15.15.40)** and the position of the Applicant, that the Proposed Development will not compromise the statutory purpose of the SDNP designation. With regards the CHAONB, the assessment in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]** also finds, as summarised in its conclusions (**paragraphs 15.15.50 – 15.15.53**), that the Proposed Development will result in not significant effects on the majority of special qualities of the CHAONB and that there is a very localised significant effect on the perceived '*unique blend of land and sea'* (SQ1) and *'significance of…. Distant landmarks across land and water'* (SQ3) experienced from a limited area of the coastal edges/open seascape at the mouth to Chichester Harbour. It is the finding of the assessment and position of the Applicant that the Proposed Development will not compromise the statutory purpose of the CHAONB designation. With regards the IoWAONB, the assessment in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]** also finds, as summarised in its conclusions (paragraphs 15.15.60 – 15.15.74), that the Proposed Development will result in not significant effects on views or special qualities of the IoWAONB. The Isle of Wight Council is in agreement with this finding that the effects of the Proposed Development on the perceived character and views from the Isle of Wight will be not significant (as noted in Table 15.7 in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]**).
I2	Natural England's advice remains that the proposed Rampion 2 wind turbine generators (WTGs) are too big and located too close to the coastline of the SHC portion of the SDNP. Their sheer size and lateral spread, combined with the marked contrast in height with the existing Rampion 1 WTGs, will be visually incoherent, clutter-up the seascape setting of the SDNP, and dramatically degrade views out to sea, particularly from Beachy Head to Birling Gap. Natural England's advice remains that the Rampion 2 WTGs should be excluded from the eastern Array (Zone 6) area.	As assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]**, the Proposed Development array area is located some 23.9km from the closest point of the SDNP coastline within the Sussex Heritage Coast (at Seaford Head) and 31.9 km from its more distant parts at Beachy Head. In views from Beachy Head and Birling Gap, the additional lateral spread of the Proposed Development (beyond that occupied by Rampion 1) will only be around 7°, which is considered a relatively small spread. The Proposed Development will form a clearly separate array grouping that has a narrower lateral spread than the existing Rampion 1 Wind Farm. The height of the Proposed Development WTGs will appear larger in apparent scale due to their taller height and larger rotor diameter; however, there is a relative balance in apparent scale and spread in perspective with the Proposed Development

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Ref	Natural England's Position	Applicant's Response
		closer and Rampion 1 more distant. Stark scale comparisons are also avoided through the evident separation or 'gap' between the distinct Rampion 1 and the Proposed Development arrays. As such it is the assessment of **Chapter 15**: **Seascape, landscape and visual impact assessment, Volume 2** **[APP-056]**, that significant effects on views from Beachy Head and Birling Gap are avoided; with significant effects occurring only on views from the closest parts of the Sussex Heritage Coast (at Seaford Head, Seven Sisters/Cuckmere Haven). The design of the Proposed Development (offshore array area) does not exclude WTGs from the eastern (Zone 6) area however the spatial extent of this Zone 6 area has been reduced considerably and the eastern edge of the Rampion 2 Offshore Array Area has been aligned with that of Rampion 1. This reduction in spatial extent of the PEIR assessment boundary (offshore array area) to the Order Limits (offshore array area) is illustrated in **Figure 3.3, Chapter 3: Alternatives, Volume 3** **[APP-075]**. As a result, the Proposed Development Order Limits within this Zone 6 area is located at greater distance from viewpoints within the Sussex Heritage Coast of the SDNP (approximately 7km further offshore than the PEIR assessment boundary) and the Proposed Development WTGs in this area will occupy a narrower lateral spread in the field of view and will be sited to the south of Rampion 1, which is considered the optimal location within the Zone 6 area, in seascape, landscape and visual terms. Through this design change, the Applicant considers that it has minimised impacts and harm to special qualities of the SDNP, particularly its 'breathtaking views' and shown regard to the statutory purpose of the SDNP.
I3	Natural England considers that the two key policy tests of concern to the Rampion 2 Examination are whether the Rampion 2 Design Principles fulfil the requirement for good design as set out in the Overarching National Policy Statement for Energy (EN-1); and (with respect to designated landscapes) the acceptability of further harm to the statutory purposes of the SDNP and special character of the SHC, and harm to the statutory purposes of the CHAONB and IoWAONB. Consequently, we do not agree that the Rampion 2 Design Principles fulfil the requirement for good design as set out in the Overarching National Policy Statement for Energy (EN-1).	**Section 15.7** of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** **[APP-056]** sets out how the Proposed Development responds to 'good design' in respect of seascape, landscape and visual receptors. SLVIA topic specific design principles are described, which set out how the design of the Proposed Development has been shaped by potential seascape, landscape and visual effects, with the aim of reducing the magnitude of effects of the Proposed Development, principally through a reduction in the spatial extent of the array area and reduction in the number of WTGs. Detailed consultations were undertaken on the design of the project during Expert Technical Group (ETG) meetings, in which SLVIA matters were a key consideration in driving the design changes made to address comments of stakeholders and provide embedded environmental measures with regard to potential seascape, landscape and visual impacts. The spatial extent of the Proposed Development array area has been substantially reduced, which reduces the horizontal spread of WTGs visible; increases the distance of the Proposed Development from the most sensitive areas of coastline (reducing the apparent height and visibility of WTGs); and achieves a separation between the Rampion 1 and the Proposed Development arrays in key views, with a better balance in apparent WTG size. The Applicant has produced and submitted a **SLVIA Maximum Design Scenario (MDS) and Visual Design Principles Clarification Note** (Appendix 17) **(Document Reference 8.31.17)** at Deadline 1, which provides further commentary on these SLVIA specific design principles and illustrates the consultations undertaken on the design of the project during ETG meetings. It is the conclusion of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** **[APP-056]** (paragraphs 15.15.9 – 15.15.74) and the position of the Applicant, that the Proposed Development will not compromise the statutory purpose of the SDNP, CHAONB and IoWAONB designations. Further justification and clarification with regards the matter of statutory purpose of the SDNP and effects of the Proposed Development on the special qualities of the

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		SDNP is set out in **Appendix 10 - Further information for Action Point 27 (document reference 8.25.10)** submitted at Deadline 1.
I4	Lastly, our assessment of the SLVIA has identified further evidence that Natural England will require to fully understand the impacts of the project on protected landscapes. This information will allow Natural England to advise on whether the current proposed design is the 'least worst possible'.	The Applicant has prepared and submitted supporting studies/clarification papers at Deadline 1 in response to Natural England's request for further evidence, as follows: • **SLVIA MDS and Visual Design Principles Clarification Note** (Appendix 17) (Document Reference 8.31.17) – to address Natural England's request for further evidence points I2 (a), (b), (c), (d), (e) and (h). • **Appendix 10 - Further information for Action Point 27** (document reference 8.25.10) – providing further information requested in response to Action Point 27 of Issue Specific Hearing 1 relating to the effects of the Proposed development on the special qualities of the SDNP and the statutory duties in relation to the SDNP.
I5	**Introduction** Please note: This appendix should be read in conjunction with the Summary of Key Environmental Concerns contained within our Relevant Representations. Natural England is the Government's statutory adviser on landscape, the designating authority for National Parks and Areas of Outstanding Natural Beauty, and the defining authority for Heritage Coasts. The following advice is offered without prejudice, and relates only to the seascape, landscape, and visual effects associated with the statutory purposes and the seascape settings of the following designated and defined landscapes; • South Downs National Park (SDNP), inclusive of the special character of the Sussex Heritage Coast (SHC) that is located wholly within it • Chichester Harbour Area of Outstanding Natural Beauty (CHAONB) • Isle of Wight Area of Outstanding Natural Beauty (IoWAONB) To assist the Examining Authority, the advice provided in this response is high-level and focused on the Design Principles of the Rampion 2 OWF (Part 1 of this response). These design principles aim to respond to the need for good design as set out in the Overarching National Policy Statement for Energy (EN-1) to reduce the potential for significant major adverse effects on the SDNP and SHC. Part 2 of this response sets out advice on the significant effects on the statutory purposes of designated landscapes that remain outstanding. Particular attention should be given to the detailed advice provided by the SDNP Authority during the Examination, since their local knowledge is of a greater depth than can be provided by Natural England. To assist in the preparation of this advice, Natural England conducted additional site visits in August 2023. Further site visits are planned ahead of the Examination commencing.	The Applicant's responses to Natural England's Summary of Key Environmental Concerns (in respect of seascape, landscape and visual matters) is provided above in response to ref 5.29 – 5.32. It is noted that Natural England's advice relates only to the SDNP (including the Sussex Heritage Coast), CHAONB and IoWAONB. The Applicant has provided responses to Natural England's advice with regards to the Design Principles of the Proposed Development and advice regarding the statutory purposes of designated landscapes in the following responses and in the supporting studies/clarification papers submitted at Deadline 1: • **SLVIA MDS and Visual Design Principles Clarification Note** (Appendix 17) (Document Reference 8.31.17)– to address Natural England's request for further evidence points I2 (a), (b), (c), (d), (e) and (h). • **Appendix 10 - Further information for Action Point 27** (document reference 8.25.10) – providing further information requested in response to Action Point 27 of Issue Specific Hearing 1 relating to the effects of the Proposed development on the special qualities of the SDNP and the statutory duties in relation to the SDNP.
I6	**Summary of Advice** 1.1 Natural England considers that the two key policy tests of concern to the Rampion 2 Examination are whether the Rampion 2 Design Principles fulfil the requirement for good design as set out in the Overarching National Policy Statement for Energy (EN-1). And	The Applicant recognises the two key policy tests of concern. **Section 15.7** of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]** sets out how the Proposed Development responds to 'good design' in respect of seascape, landscape and visual receptors. Opportunities for enhancement of the quality of an area through the 'Good Design' of

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	(with respect to designated landscapes) the acceptability of further harm to the statutory purposes of the SDNP and special character of the SHC, and harm to the statutory purposes of the CHAONB and IoWAONB. 1.2 Natural England does not agree that the Rampion 2 Design Principles fulfil the requirement for good design as set out in the Overarching National Policy Statement for Energy (EN-1). We also advise that the project will significantly affect the statutory purposes of the SDNP and the special character of SHC, as well as the statutory purposes of the CHAONB and the IoWAONB. 1.3 Natural England do recognise the iterative changes made to the DCO order limits between the PEIR and ES stages (as shown in Figure 15.2), as well as the use of design principles to inform these changes. However, whilst accepting that the design changes introduced following the Section 42 consultation have reduced the adverse effects of the scheme on the portion of the SDNP contained within the SHC, Natural England maintains that the proposal will significantly affect the statutory purposes of the SDNP. This is for the following reasons: a. The wind turbine generators (WTG) of the Rampion 2 OWF maximum design scenario are too big and located too close to the coastline of the SHC portion of the SDNP. Their sheer size and the lateral spread, combined with the marked contrast in height with the existing Rampion 1 WTG will be visually incoherent, clutter-up the seascape setting of the SDNP and dramatically degrade views out to sea, particularly from Beachy Head to Birling Gap. Natural England therefore advises that WTG should be excluded from the Rampion Zone 6 western array area, thereby adhering to the Design Principles as secured in the Rampion 1 DCO/DML. b. The expansion of the influence of turbines westwards through development within the Rampion extension area will increase the industrialisation of the seascape setting of the SNDP, particularly for inland locations located to the west of Wilmington Hill. Their presence in the seascape setting of the SDNP will further degrade the quality of views out to sea which are already adversely influenced by the turbines of the Rampion 1 array and will lead to further loss of the natural beauty for which this landscape was designated. c. The westward expansion will also result in significant effects on the seascape setting of the CHAONB (although this will be limited) and more extensively the eastern portions of the IoWAONB at Bembridge Down and St. Boniface Down, resulting in further loss of natural beauty for these designations as well. 1.4 Our assessment of the SLVIA has identified further evidence that Natural England will require to fully understand the impacts of the project on protected landscapes. This information will allow Natural England to advise on whether the current proposed design is the 'least worst possible'.	an offshore wind farm are limited to some degree, due to the technical and economic requirements associated with producing renewable energy as well as other environmental factors. The need to retain flexibility of WTG numbers, size and location within the Proposed Development array area through the planning stages and assessment of a Maximum Design Scenario (a necessary part of the process that is recognised through the NPS at paragraphs 4.2.11 – 4.2.12) also limits opportunities for good design to a degree, however the Applicant has undertaken and applied the principles of good design as far as practicable to arrive at the Proposed Development design selected for the DCO application. The spatial extent of the Zone 6 area has been reduced considerably as part of the design of the Proposed Development (offshore array area) and the eastern edge of the Rampion 2 Offshore Array Area has been aligned with that of Rampion 1. This reduction in spatial extent of the PEIR assessment boundary to the Order Limits (offshore array area) is illustrated in **Figure 3.3, Chapter 3: Alternatives - Figures, Volume 3 [APP-075]**. As a result of this design change and the embedded measures that address the design principles in **Section 15.7** of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]**, the Proposed Development Order Limits within this Zone 6 area is located at greater distance from viewpoints within the Sussex Heritage Coast of the SDNP (approximately 7km further offshore than the PEIR assessment boundary) and the WTGs in this area will occupy a narrower lateral spread in the field of view than the existing Rampion 1 Wind Farm and will be sited to the south of Rampion 1, which is considered the optimal location within the Zone 6 area, in seascape, landscape and visual terms. 'Wind farm separation zones' also achieve a separation between Rampion 1 and Rampion 2 arrays, with a clear line of sight between arrays in key views from the Heritage Coast of the SDNP. The Applicant considers that the current design for the Proposed Development is the *'least worst possible'* in respect of the Zone 6 area. The Applicant has produced and submitted a **SLVIA MDS and Visual Design Principles Clarification Note** (Appendix 17) (Document Reference 8.31.17) at Deadline 1, which provides further commentary on these SLVIA specific design principles. The Applicant considers that the design of the Proposed Development (offshore array area) has minimised impacts and harm to special qualities of the SDNP, particularly its 'breathtaking views' and that it has shown regard to the statutory purpose of the SDNP. It is the conclusion of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]** (**paragraphs 15.15.9 – 15.15.74**) and the position of the Applicant, that the Proposed Development will not compromise the statutory purpose of the SDNP, CHAONB and IoWAONB designations. Further justification and clarification with regard the matter of statutory purpose of the SDNP and effects of the Proposed Development on the special qualities of the SDNP is set out in **Appendix 10 - Further information for Action Point 27** (document reference 8.25.10) submitted at Deadline 1. Addressing points (a) to (c) specifically: a. As assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]**, the Proposed Development array area is located some 23.9 km from the closest point of the SDNP coastline within the Sussex Heritage Coast (at Seaford Head) and 31.9 km from its more distant parts at Beachy Head. In views from Beachy Head and Birling Gap, the additional lateral spread of the Proposed Development (beyond that occupied by Rampion 1) will only be around 7°, which is considered a relatively small spread. The Proposed Development will form a clearly separate array grouping that has a narrower lateral spread than

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		the existing Rampion 1 Wind Farm. The height of the Proposed Development WTGs will appear larger in apparent scale due to their taller height and larger rotor diameter; however, there is a relative balance in apparent scale and spread in perspective with the Proposed Development closer and Rampion 1 more distant. Stark scale comparisons are also avoided through the evident separation or 'gap' between the distinct Rampion 1 and the Proposed Development arrays. As such it is the assessment of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** **`[APP-056]**, that significant effects on views from Beachy Head and Birling Gap are avoided; with significant effects occurring only on views from the closest parts of the Sussex Heritage Coast (at Seaford Head, Seven Sisters/Cuckmere Haven). The design of the Proposed Development (offshore array area) does not exclude WTGs from the eastern (Zone 6) area however the spatial extent of this Zone 6 area has been reduced considerably and the eastern edge of the Rampion 2 Offshore Array Area has been aligned with that of Rampion 1. This reduction in spatial extent of the PEIR assessment boundary (offshore array area) to the Order Limits (offshore array area) is illustrated in **Figure 3.3, Chapter 3: Alternatives - Figures, Volume 3** **[APP-075]**. As a result, the Proposed Development DCO Order Limits within this Zone 6 area is located at greater distance from viewpoints within the Sussex Heritage Coast of the SDNP (approximately 7km further offshore than the PEIR assessment boundary) and the Proposed Development WTGs in this area will occupy a narrower lateral spread in the field of view and will be sited to the south of Rampion 1, which is considered the optimal location within the Zone 6 area, in seascape, landscape and visual terms. Through this design change, the Applicant considers that it has minimised impacts and harm to special qualities of the SDNP, particularly its 'breathtaking views' and shown regard to the statutory purpose of the SDNP. b. The conclusions of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** **[APP-056]** (**paragraphs 15.15.24 – 15.15.28**) summarise the effects of the Proposed Development on the open downs of the SDNP (*'inland locations located to the west of Wilmington Hill'*), which occur particularly as a result of the expansion of the influence of the Proposed Development WTGs westwards, in which its full western spread can be appreciated in the context of Rampion 1. Although significant effects on views will be experienced by people within this range of inland vantage points along the open tops of the downs, due to the increase in the WTG developed seascape in panoramic views from the tops of the downs, the Proposed Development will be located at considerable distance (generally 20-30 km to the closest WTG) and will be experienced within a remote context setting beyond the intervening, non-designated and urbanised coastal strip between these open downs and the sea. c. With regards to the CHAONB, the assessment in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** **[APP-056]** also finds, as summarised in its conclusions (paragraphs 15.15.50 - 15.15.53), that the Proposed Development will result in not significant effects on the majority of special qualities of the CHAONB and that there is a very localised significant effect on the view from Eastoke Point (Viewpoint 22) at the mouth of the harbour and the perceived '*unique blend of land and sea'* (SQ1) and '*significance of…. distant landmarks across land and water'* (SQ3) experienced from a limited area of the coastal edges/open seascape at the mouth to Chichester Harbour. It is the finding of the assessment and position of the Applicant that the Proposed Development will not compromise the statutory purpose of the CHAONB designation. With regards the IoWAONB, the assessment in **Chapter 15: Seascape,**

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Ref	Natural England's Position	Applicant's Response
		landscape and visual impact assessment, Volume 2 [APP-056] also finds, as summarised in its conclusions (paragraphs 15.15.60 – 15.15.74), that the Proposed Development will result in not significant effects on views or special qualities of the IoWAONB. The Isle of Wight Council are in agreement with this finding that the effects of the Proposed Development on the perceived character and views from the Isle of Wight will be not significant (as noted in **Table 15.7** in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]**).
I7	**A summary of the key further evidence needed to inform the SLVIA** 2.1 This section summarises the further evidence that Natural England require from the Applicant to fully understand the impacts to designated landscapes and advise on whether the current proposed design is the 'least worst possible' i.e. that sufficient effort has been taken to avoid, reduce and mitigate impacts. a. Detail on how the Rampion 1 Design Principles have influenced the Rampion 2 maximum design scenario. b. The Applicant's justification for why the Rampion 1 mitigation measures do not directly apply to the Rampion 2 project. c. Evidence to demonstrate why constructing more WTG in the Zone 6 (Eastern Array Area) than described within the indicative layout would not present a 'greater worse-case effect'. d. Evidence to show that a greater densification of WTG in either the Zone 6 Area or Extension Area will not materially increase the effect of the Proposed Development on coastal views from protected landscapes. e. An explanation of the balancing exercise that was undertaken between the spatial extent of the Rampion 2 array and the apparent height of Rampion 2 WTGs. f. A report on the cumulative visual effects, which includes an assessment of the visual effects from the perceived heights of the Rampion 2 WTGs in comparison to the Rampion 1 WTGs. g. Paragraph 15.7.29 states that 'the less HFoV that is affected, the lower the magnitude of change'. The Applicant should provide a detailed explanation of how the magnitude of change at representative viewpoints has been determined exactly, given the Preliminary Environmental Impact Report (PEIR) or Environmental Statement (ES) design option. h. A demonstration of how the design of Rampion 2 limits as far as possible the horizontal field of view (HFoV) of WTG from the SDNP and the SHC. i. A clear and direct assessment of the impact that the Rampion 2 Design Principles have on the special qualities of the SDNP. j. Justification as to how the natural beauty of the SDNP, in those proportions of the National Park adversely effected by the scheme, will remain unchanged given the SLVIA conclusion that significant harm is likely to occur to Special Quality 1 - diverse, inspirational landscapes and breath-taking views. k. A conclusion on the significance of the change to tranquillity (SDNP Special Quality 3 – tranquil and unspoilt places) at night-time 'around the tops of the downs' where 'tranquillity is greatest'. l. An assessment of the impact that the Rampion 2 Design Principles have on the special qualities of the CHAONB and IoWAONB.	The Applicant has provided further evidence requested by Natural England in the following supporting studies/clarification notes submitted at Deadline 1: • **SLVIA MDS and Visual Design Principles Clarification Note** (Appendix 17) (Document Reference 8.31.17) – to address Natural England's request for further evidence points I2 (a), (b), (c), (d), (e) and (h). • **Appendix 10 - Further information for Action Point 27** (document reference 8.25.10) – providing further information requested in response to Action Point 27 of Issue Specific Hearing 1 relating to the effects of the Proposed development on the special qualities of the SDNP and the statutory duties in relation to the SDNP. Clarification with regards the remaining points (f), (g) and (i) is provided as follows. f. As set out in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056] Section 15.12**, there are no under-construction, consented, application stage or scoping stage offshore wind farms within the SLVIA study area (nor within UK waters within approximately 140 km of the array area), therefore it is considered that there is no potential for the Proposed Development (offshore array area) to have cumulative effects with other under-construction, consented, application stage or scoping stage projects. In accordance with guidance (GLVIA3, Landscape Institute 2013, para 7.13), existing projects and those which are under construction (i.e. Rampion 1) are included in the SLVIA baseline and described as part of the baseline conditions, including the extent to which these have altered character and views. An assessment of the effect of the Proposed Development is therefore undertaken against a baseline that includes the operational Rampion 1 as part of the main assessment in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056] Section 15.10** (O&M phase). This includes assessment of the Proposed Development against magnitude factors such as its size, scale, spread and landscape context, as well as factors relating to the operational Rampion 1 wind farm, such as its increase in spread, aesthetic relationship and consistencies of perceived scale and spacing in comparison to the Rampion 1 WTGs. In undertaking its cumulative assessment with Rampion 1, the Applicant has followed the Planning Inspectorate's Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects, in particular the note under table 2 which does not include operational projects in its tiered approach to assessing cumulative effects (Table 2) and states: *"Where other projects are expected to be completed before construction of the proposed NSIP and the effects of those projects are fully determined, effects arising from them should be considered as part of the baseline and may be considered as part of both the construction and operational*

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	m. A technical assessment, inclusive of modelling work, on potential visual effects from both navigation and aviation lighting to IoWAONB Special Quality 5 – great opportunities for recreational activities and learning experiences. Further context and explanation is provided within our detailed advice below.	*assessment. The ES should clearly distinguish between projects forming part of the dynamic baseline and those in the CEA."* g. and h. - The Applicant would note that the magnitude of change has been assessed at representative viewpoints based on the magnitude of change factors and definitions set out in **Appendix 15.2: Seascape, Landscape, and Visual Impact Assessment methodology, Volume 4 [APP-158]** (paragraph 1.6.16 and Table 1-5). In relation to horizontal field of view (HFoV) specifically, an assessment is provided for each representative viewpoint assessed in detail in **Appendix 15.4: Viewpoint assessment, Volume 4 [APP-160]**. Each viewpoint, under the bullet point 'Field of View' includes a description and measurement (in degrees) of the overall HFoV affected by the Proposed Development as a proportion of the available view, as well as the additional HFoV that the Proposed Development adds beyond the HFoV already affected by Rampion 1 i.e. its additional contribution or extension to the wind farm developed HFoV. HFoV is one of several factors that are considered to arrive at an assessment of magnitude of change. i. A clear assessment of the effect of the Proposed Development (offshore array area) on the special qualities of the SDNP is provided in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]** (**Table 15-32**), with **Section 15.7** setting out the design principles and embedded measures that have reduced the impact of the Proposed Development on the special qualities of the SDNP. The Applicant has produced and submitted a **SLVIA MDS and Visual Design Principles Clarification Note** (Appendix 17) **(Document Reference 8.31.17)** at Deadline 1 which provides further commentary on these SLVIA specific design principles, including how they have reduced the impact of the Proposed Development on the special qualities of the SDNP.
I8	**Detailed Comments** **PART 1: The Rampion 2 Design and Design Principles** 3.1 Natural England welcomes the efforts of the Applicant in updating the design of the Rampion 2 project, and developing the four Design Principles that now underpin it. In particular, Natural England note the reduction in the extent of the eastern boundary of Rampion 2; a design change to ensure that the DCO for Rampion 2 does not compromise the Structures Exclusion Zone (SEZ) crucial to the Rampion 1 DCO (which serves to mitigate impacts of Rampion 1 on the SDNP and SHC). However, it should be noted that although there is a notable reduction in impact, the updated design will still cause harm to the Statutory purposes of the SDNP, including the SHC, CHAONB and the IoWAONB. 3.2 On page 85 of the SLVIA it is noted by the Applicant that; 'These Design Principles were developed in consultation with Natural England, drawing on the Rampion 1 Design Principles and those specifically recommended by Natural England for Rampion 2 during consultations.' While the SLVIA is true in stating that the new Design Principles for the Rampion 2 project 'have been developed in consultation with stakeholders' (para 15.7.24), this statutory consultation is the first time that Natural England have seen and commented on the details of the evolved design of Rampion 2 since PEIR, and the Design Principles that informed it (as described from page 286 of ES Chapter 15).	The Applicant welcomes the recognition from Natural England that changes were made to the DCO Order Limits have reduced the adverse effects of the Proposed Development on the portion of the SDNP contained within the Sussex Heritage Coast. This reduction in spatial extent of the PEIR assessment boundary (offshore array area) to the DCO Order Limits (offshore array area) is illustrated in **Figure 3.3, Chapter 3: Alternatives - Figures, Volume 3 [APP-075].** It is the conclusion of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056] (paragraphs 15.15.9 – 15.15.74**) and the position of the Applicant, that the Proposed Development will not compromise the statutory purpose of the SDNP, CHAONB and IoWAONB designations. Further justification and clarification with regards to the matter of statutory purpose of the SDNP and effects of the Proposed Development on the special qualities of the SDNP is set out in **Appendix 10 - Further information for Action Point 27 (document reference 8.25.10)** submitted at Deadline 1. The Applicant notes the set of design principles proposed by Natural England in its Section 42 advice. Design principles (b), (c), (d), (e) have been incorporated within the SLVIA topic specific design principles that have shaped the design of the Proposed Development, as described in **Section 15.7** of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]**. The Applicant has produced and submitted a **SLVIA MDS and Visual Design Principles Clarification Note** (Appendix 17) **(Document Reference 8.31.17)(**submitted at

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	3.3 We wish to highlight that Natural England proposed a set of design principles for the Rampion 2 development in our Section 42 advice, as follows: • There should be no turbines constructed within Zone 6 • Reducing the combined horizontal extent (lateral spread) of turbines associated with a visually combined R1 and R2 scheme, or • There should be perceptible separation distance (from all land-based viewpoints) between the existing R1 OWF and the new R2 array by concentrating development in the western end of the Rampion Extension area. The distance should be sufficient that a clear distinction can be made between the two arrays, in order that they are perceived as separate objects in the seascape when viewed from the shore and from within the SDNP. • Clear lines of sight should be left between the arrays (R1 and R2), so that open views to the horizon are maintained when viewed from shore and from within the SDNP. • The design of the new array should aim to balance the two arrays as far as practicable in terms of apparent turbine size and spacing, taking advantage of the effects of perspective to reduce any apparent difference in size between turbines. • Implement reduced aviation lighting intensity for the R1 array (from 2000cd to 200cd). (Nb. the Applicant has already agreed to the dimming of aviation lights to 200cd where visibility conditions permit, which is welcomed). 3.4 Natural England continues to consider that these design principles have greater potential to reduce the potential impacts of the proposal on designated landscapes.	Deadline 1), which provides further commentary on these SLVIA specific design principles. The degree to which the Applicant has been able to embed Natural England's suggestions within the project design has been limited to some degree by the technical and economic requirements associated with producing renewable energy as well as other environmental factors. In respect of Natural England's recommended design principle (a), the design of the Proposed Development (offshore array area) does not exclude WTGs from the eastern (Zone 6) area, however the spatial extent of this Zone 6 area has been reduced considerably, as shown in **Figure 3.3, Chapter 3: Alternatives - Figures, Volume 3 [APP-075]**. As a result, the Proposed Development DCO Order Limits within this Zone 6 area is located at greater distance from viewpoints within the Sussex Heritage Coast of the SDNP (approximately 7km further offshore than the PEIR assessment boundary) and the Proposed Development WTGs in this area will occupy a narrower lateral spread in the field of view than the existing Rampion 1 Wind Farm and will be sited to the south of Rampion 1, which is considered the optimal location within the Zone 6 area, in seascape, landscape and visual terms. Through this design change, the Applicant considers that it has minimised impacts and harm to special qualities of the SDNP, particularly its 'breathtaking views' and 'panoramic views of the sea' and shown regard to the statutory purpose of the SDNP.
I9	**Policy Test: Do the Rampion 2 Design Principles fulfil the requirement for good design as set out in EN-1?** 3.5 Natural England's current position regarding the extent to which the Rampion 2 meet the policy tests in the Overarching National Policy Statement (NPS) for Energy (EN-1) is as follows: a. Proposed environmental measure C-61 demonstrates the Applicant's commitment to applying 'due regard' to 'Design Principles held in Rampion 1 Design Plan'. These Design Principles related entirely to upholding the statutory purposes of the coastal portion of the SDNP and SHC. For ease of reference the Rampion 1 Design Principles' (Condition 11, Part 2, 11 (3a) of Schedule 13 (p.106)) are included here; (3) The design plan required to be approved under paragraph (1)(a) must— (a) be prepared having regard to the need to— (i) limit as far as possible the horizontal degree of view of wind turbine generators from the South Downs National Park and the Sussex Heritage Coast; (ii) increase as far as possible the distance of the wind turbine generators from the South Downs National Park and the Sussex Heritage Coast; (iii) locate the largest turbines, in any hybrid scheme, to the south-western portion of the Order limits; and (iv) provide clear sight lines through the wind turbine layout in order that the regular geometric pattern of the array is apparent in views from the South Downs National Park and Sussex Heritage Coast; and b. The Rampion 2 project is now associated with four new Design Principles which 'draw on' (page 85 of ES SLVIA), but do not replicate, the four principles listed in	The Applicant notes Natural England's current position regarding the extent to which the Proposed Development meets the policy tests in NPS EN-1 and provides the following responses to each point as follows: a. The Applicant considers that it has had, and is having, due regard to the design principles held in the Rampion 1 Design Plan, however it would note that The Proposed Development is a different project that should respond to its own design parameters and principles. The topic specific SLVIA design principles that have shaped the design of the Proposed Development (**Section 15.7** of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]**) have nonetheless, incorporated many elements of the Rampion 1 design principles including limiting the HFoV of WTGs from the SDNP and Sussex Heritage Coast; increasing the distance of WTGs from the Sussex Heritage Coast of the SDNP; locating WTGs further to the south-west; and providing a clear line of sight between the Rampion 1 and the Proposed Development arrays. b. The Applicant considers that it would not be appropriate to replicate the Rampion 1 design principles in their entirety and that the Proposed Development should respond to its own design parameters and principles, while having cognisance of those implemented for Rampion 1. Design principles that help reduce effects on the Sussex Heritage Coast of the SDNP have been incorporated or adapted to apply to the design of the Proposed Development, while other Rampion 1 principles that are not considered appropriate for the Proposed Development have not been included. h. and ii The design evolution of the Proposed Development offshore array is described in **Chapter 3: Alternatives, Volume 2 [APP-044]** (paragraphs 3.2.1 – 3.2.44) and the SLVIA specific design principles are described in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]** (**Section 15.7**). The Applicant

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	Condition 11, Part 2, 11 3(a) (page 106) of the Rampion 1 DCO. Natural England consider that the purpose of the Rampion 2 Design Principles is the same as the Rampion 1 Design Principles, i.e. to reduce the risk of harm to the statutory purposes of the designations. Natural England highlights the following points: i. Natural England's Section 42 response requested that the Applicant produce a 'detailed account as to how the R1 Design Principles have influenced the R2 maximum design scenario as a matter of urgency'. However, Natural England cannot find this account within the Rampion 2 submission documents. We advise that this account is also a requirement of national policy. Section 4.5.4 of EN-1 states: *'applicants should be able to demonstrate in their application documents how the design process was conducted and how the proposed design evolved'.* ii. Natural England advises that a statement is submitted into the Examination by the Applicant on why the Rampion 1 mitigation measures do not directly apply to the Rampion 2 Project, which in effect, is a direct extension of the Rampion 1 array. We believe this is necessary because: • The Applicant's justification for environmental measure C-61 is that 'where appropriate, the intentions of the Design Principles established for Rampion 1 are followed through to the Rampion 2 design plan'. Consequently, the Examining Authority must be provided with information on where it was not appropriate to apply Rampion 1 Design Principles to the Rampion 2 Project, and a rationale for why this is the case. This information is not currently available in the Environmental Statement. • Natural England has identified direct consequences of the Rampion 1 DCO Design Principles not being fully applied; for example, see 3 (c) (ii) and 5 (b) within this response. c. Considering that the 'maximum assessment assumptions require flexibility on the balance of WTGs located within the Zone 6 Area and Extension Area' and appreciating that the Maximum Design Scenario (MDS) layout is 'weighted towards the northern coastward perimeters of the wind farm array area, as close as possible to the coastline', Natural England does not understand how a 'greater proportion of WTGs in either zone will not result in a greater worse-case effect' than is already presented by R1. This is because: i. Natural England advised at the Section 42 consultation (and continues to advise) that there should be no turbines in the Crown Estate Zone 6 due to the potential for major adverse seascape and visual effects on the most sensitive views from within the SHC, which is located wholly within the SDNP. Therefore constructing more turbines in the Zone 6 Area than described within the indicative layout would present a 'greater worse-case effect'. ii. Evidence has not been provided with the ES to show that a greater densification of turbines in either the Zone 6 Area or Extension Area 'will not materially increase the effect of the Proposed Development in coastal views' (SLVIA page 277). This evidence will be crucial for the Examining Authority to consider in the light of the following factors: • the density of turbines is an important element of how the array will be perceived from many of the representative viewpoints,	has produced and submitted a **SLVIA MDS and Visual Design Principles Clarification Note**' (Appendix 17) (Document Reference 8.31.17) (at Deadline 1), which provides further commentary on the SLVIA specific design principles for the Proposed Development and the degree to which they have been influenced by the Rampion 1 Design Principles. c. i. and ii. The MDS for seascape, landscape and visua is described in **Table 15-25, Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]** and the MDS layout is shown in **Figure 15.1** of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 3**) **[APP-088]** with WTGs located to the full eastern and western extent of the wind farm array area, and in positions that are weighted towards the coastward perimeters of the Proposed Development array area, as close as possible to the coastline within the array area, to represent the maximum effect in terms of the proximity, scale and spread of the WTGs in coastal views from receptors around the coastline, including Sussex Heritage Coast and South Downs National Park (SDNP) to the north and east, and West Sussex, the CHAONB and IoW AONB to the west. c. iii. The Applicant is currently unable to commit to defining a maximum number of WTGs within each of the western extension area and Zone 6 area. The Crown Estate is currently exploring the opportunity for Rampion 2 (along with other projects) to increase the capacity currently allowed in their respective Agreements for Lease. If this is awarded by the Crown Estate, the balance between the turbines in each of the two areas of the array may change. Until then the Applicant needs to retain flexibility in the project design and the number of WTGs located in each zone. • The minimum spacing for the larger WTG type is defined in **Chapter 4: The Proposed Development, Volume2 [APP-045]** (**Table 4-2**) as 1,130 m. In respect of the Zone 6 area, the Applicant can confirm that the SLVIA MDS layout is based on a grid of 'nodal points' at 1,130 m spacing (**Chapter 4: The Proposed Development, Volume 2 [APP-045] Table 4-2**). 34 of these nodal points are located within the DCO order limits of the Zone 6 area, with 30 nodal points occupied by an indicative WTG location in the SLVIA MDS layout shown in **Figure 15.1** of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 3** [**APP-088**] and only four nodal points not utilised, in the far south-western part of Zone 6. At the minimum spacing (1,130 m) it is therefore only possible to accommodate a further four of the larger WTG type at the rear of the Zone 6 array, furthest offshore from the Sussex Heritage Coast of the SDNP, which would not notably increase the densification of WTGs in views. Based on the minimum separation for the larger WTG type, the Applicant considers that the potential for further densification within DCO order limits of the Zone 6 area is limited. In this respect, it is reasonable to assume that a notably higher number WTGs, and therefore potential densification, could only be accommodated within the western extension area and not the eastern Zone 6 area. However, an increase in the number of WTGs in the western zone would be accompanied by a decrease in the Zone 6 area. • The Applicant would highlight that Rampion 1 Design Principle (a) (iii) applied to larger WTGs within any hybrid scheme (WTGs of different heights in different parts

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	• the presence of a reduced perceived density of turbines is also crucial to achieving the 'separation foreground' Design Principle (SLVIA paragraph 15.7.49). iii. Based on such evidence (when available) and to achieve the 'separation foreground' Design Principle, Natural England advises that there should be an agreed maximum number of turbines in each zone. This is because: • The proposed minimum spacing of the larger height turbines has reduced since the S42 consultation (Table 4-2), exacerbating the potential for a densification of turbines in either zone. • The Applicant committed to applying 'due regard' to 'Design Principles held in Rampion 1 Design Plan' with proposed environmental measure C-61. Design Principle (a) (iii) listed in Condition 11, Part 2, 11 3(a) (page 106) of the Rampion 1 DCO required the largest turbines (in any hybrid scheme) to be located to the south-western portion of the order limits and were not to be constructed in most sensitive areas of the Rampion 1 order limits. Therefore, this is in contrast with the Applicant's request to construct in zone 6, and the flexibility being requested by the Applicant regarding the 'balance of WTGs located within the Zone 6 Area and Extension Area'. This is of particular concern given the difference in height between the existing array and the proposed WTG for Rampion 2. d. Natural England agrees that the reduction in the spatial extent of the Rampion 2 array will result in a 'better balance in apparent WTG size' compared to the original proposal (Table 15-7, page 65). But the SLVIA does not describe any balancing exercise undertaken or contain a narrative to support this claim. Natural England would like to understand how this 'better balance' was determined. i. A 'better balance in apparent WTG size' does not mean that the apparent Rampion 2 turbine sizes will not remain significant in EIA terms from key viewpoints within designated landscapes. This is because: • The apparent heights to blade tip of the nearest Rampion 2 WTGs do not fall below 0.4 degrees from any of the viewpoints included within the Environmental Statement that are situated within a designated landscape, indicating that the scale of effects from all viewpoints within designated landscapes have the potential to be significant (see Part 2 of this response for more details, and Appendix 2 for further information on apparent heights). • The apparent differences in size between the Rampion 1 and Rampion 2 WTGs will still exacerbate the adverse seascape and visual issues associated with the Rampion 2 project; particularly since the minimum turbine size has now increased since the Section 42 consultation. ii. Natural England agrees with paragraph 15.6.27 of the SLVIA , which reports that the perceived heights of the Rampion 2 turbines in comparison to the Rampion 1 turbines 'is likely to be central to the potential for cumulative visual effects'. However, it is not clear where an assessment of these cumulative visual effects is undertaken within the SLVIA, or what the conclusion of this assessment on cumulative visual effects is. If it has not been undertaken this assessment should be submitted into the Examination as a matter of urgency.	of the site), which was not implemented at Rampion 1 and is not under consideration for the Proposed Development (this has been secured in the updated **draft DCO [PEPD-009])**. (and therefore would not be an appropriate design principle). Furthermore, the Rampion 1 consented area extended notably further east than is proposed in the Proposed Development DCO order limits. This is illustrated in the **SLVIA MDS and Visual Design Principles Clarification Note** (Appendix 17) **(Document Reference 8.31.17)** (submitted at Deadline 1). The Proposed Development has already applied design mitigation in this regard through the revised spatial extent of the Order Limits, which avoids the 'most sensitive areas' to the east of the Rampion 1 consented area and Zone 6 area. The Proposed Development Order Limits (offshore array area) do not extend to the east of Rampion 1 and entirely avoid the consented areas of Rampion 1 that were in closer proximity to the Suffolk Heritage Coast of the SDNP. Further explanation of the how the Proposed Development has been designed to avoid these areas of Zone 6 to occupy the optimal area to the south of Rampion 1 (the less sensitive south-western portion of Zone 6) is described in the **SLVIA MDS and Visual Design Principles Clarification Note** (Appendix 17) (Document Reference 8.31.17) (submitted at Deadline 1). d. The Applicant welcomes Natural England's view that (as reported in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]**), the reduction in the spatial extent of the Proposed Development array will result in a better balance in apparent WTG size compared to that proposed in the PEIR. The Applicant considers that this is clear in visual representations provided in the ES from views on the Sussex Heritage Coast of the SDNP, including Viewpoint 1 Beachy Head (**Chapter 15: Seascape, landscape and visual impact assessment - Figures, Volume 3, Figure 15.26**, **[APP-091]**) and Viewpoint 2 Birling Gap (**Chapter 15: Seascape, landscape and visual impact assessment, Volume 2, Figure 15.27**, **[APP-091]**), and the viewpoint assessments described for these in **Appendix 15.4: Viewpoint assessment, Volume 4 [APP-160]**. Further narrative around the balancing exercise undertaken between design principles is provided in the **SLVIA MDS and Visual Design Principles Clarification Note** (Appendix 17) (**Document Reference 8.31.17**) (submitted at Deadline 1). i. With regard to the apparent height of the Proposed Development WTGs, the Applicant would note a number of considerations and limitations with using apparent height calculations. Firstly, the analysis in Table 1 of Natural England's relevant representation only considers the apparent height of the closest visible turbine in the Proposed Development array. It does not allow for variations in apparent height that will occur between different WTGs in the array, depending on their distance offshore. WTGs located at greater distance offshore within the Proposed Development Order Limits will have a lower apparent height, creating variations and similarities in scale/apparent height between windfarms depending on distance of turbines offshore. The Applicant considers that judgements on significance should properly be based on the assessment material provided in the ES and not on the quantitative assessment of vertical angle values. Variations in the apparent height and distance of turbines between different viewpoints are incorporated in the Applicant's visual assessment in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]** and shown clearly in the visualisations in **Chapter 15: Seascape, landscape and visual impact assessment - Figures, Volume 3, Figures 15.26 – 15.79 [APP-091 to APP-095]**.

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	e. Natural England recognises the efforts of the Applicant in reducing the horizonal field of view of the Rampion 2 array. The SLVIA states that this Design Principle reduces the magnitude of change for many viewpoints, with significant implications for the Applicant's own assessment of effects. However, given the substantial scale and lateral spread of development that the reduced array area still represents (bearing in mind the human eye physically cannot see the entirety of the R2 array in a single view from the majority of the representative viewpoints), clarification should be provided by the Applicant regarding how the actual decreases in magnitudes of change between design options have been determined. i. Natural England advises that addressing this issue is critical to understanding the judgements made in the SLVIA, as the horizonal extent of Rampion 2 will be double or triple the horizonal extent of Rampion 1 from most viewpoints within designated landscapes (Table 15-27). This means that a very large proportion of the visible seaward horizon will be enclosed by Rampion 2. It is not clear from the SLVIA whether the significance of visual effects described have reduced simply because the Rampion 2 ES design now has a smaller Horizontal Field of View (in degrees). ii. The Applicant has committed to applying due regard 'to Design Principles held in Rampion 1 Design Plan' with proposed environmental measure C-61. Design Principle (a) (i) listed in Condition 11, Part 2, 11 3(a) (page 106) of the Rampion 1 DCO refers to the 'need to limit as far as possible the horizonal degree of view of wind turbine generators from the SDNP and the SHC'. However, it has not been established whether the design of Rampion 2 now limits, as far as possible, the horizonal field of view of wind turbine generators from the SDNP and the SHC. Evidence on this matter is not presented within the SLVIA and should be submitted into the Examination. f. Natural England supports the inclusion of the 'wind farm separation zones' Design Principle, as it successfully acts to significantly reduce seascape and visual effects on the most sensitive views from parts of the SHC within the SDNP. The comparative wirelines drawings presented in Figures 15.93 to 15.109, Volume 3, of the ES (Document Reference: 6.3.15) are particularly helpful in demonstrating this design success. However, contrary to aims of this Design Principle, no view from within the SDNP provides a clear line of sight between Rampion 1 and Rampion 2. In no view, with the possible exception of the view from the beach at Cuckmere Haven where westerly views are obscured by cliffs, are the WTGs of Rampion 1 and 2 actually perceived as separated. In all instances, even at Beachy Head, the visible separation 'between arrays' is actually a separation between the Zone 6 Area and the Extension Area of the Rampion 2 project. Consequently, in many views, Rampion 2 itself appears as two separate wind farms. 3.6 Due to the above, Natural England considers that the Rampion 2 Design Principles do not fulfil the requirement for good design as set out in the Overarching National Policy Statement for Energy (EN-1).	It is noted from Table 1 of Natural England's relevant representation that the apparent vertical angle (in degrees) taken up by the closest WTG is between 0.4˚ and 0.9˚ from the viewpoints presented in the SDNP. The Applicant notes that there may be up to 180˚ vertical angle of sky visible to an observer from open locations along the coast or the tops of the South Downs, over which the Proposed Development WTGs may occupy less than 0.9˚ of this arc. The Applicant also considers that the apparent scale of the closest WTG between 0.4˚ and 0.9˚ is comparable to the range of other consented and operational offshore windfarms, including: • Rampion 1 (116 x 140 m blade tip WTGs) operational 14.4 km from the SDNP (at its closest point), where the closest WTG would have an apparent height of approximately 0.51˚. • Burbo Bank Extension (32 x 190 m WTG) operational 14.6 km from the Clwydian Range AONB (at its closest point), where the closest turbines would have an apparent height of approximately 0.73˚. • Scroby Sands (100 m blade tip WTGs) operational 2.5 km off the Norfolk coast, which has an apparent height of 1.85˚ in the view from the closest section of coast near Caister-on-Sea. • Gunfleet Sands (129 m – 144 m blade tip WTGs) operational 7 km off the Essex coast has an apparent height of 1.1˚ in the view from the closest section of coast at Clacton-on-Sea. • East Anglia TWO (300 m blade tip WTGs) consented 32.6 km off the Suffolk Coast and Heaths AONB, has an apparent height of 0.47˚. The Applicant notes the apparent differences in size between the Rampion 1 and the Proposed Development WTGs. Variations in the apparent height of the WTGs are incorporated in the Applicant's visual assessment in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]** and shown clearly in the visualisations in **Chapter 15: Seascape, landscape and visual impact assessment - Figures, Volume 3, Figures 15.26 – 15.79 [APP-091 to APP-095]**. As described in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]** (**Section 15.7**), the spatial extent of the Proposed Development was defined with reference to the 'separation foreground' design principle, to minimise scale differences insofar as possible, in views from the Sussex Heritage Coast of the SDNP. The easterly spatial extent of the Proposed Development was substantially reduced such that the Proposed Development WTGs are no longer to the east of Rampion 1, which reduces the apparent scale juxtaposition of larger WTGs in front of smaller WTGs in coastal views. ii. As set out in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056] Section 15.12**, in accordance with guidance (GLVIA3, Landscape Institute 2013, para 7.13), existing projects and those which are under construction (i.e. Rampion 1) are included in the SLVIA baseline and described as part of the baseline conditions. An assessment of the effect of the Proposed Development is therefore undertaken against a baseline that includes the operational Rampion 1 as part of the main assessment in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056] Section 15.10** (O&M phase). This includes

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		assessment of the Proposed Development against magnitude factors such as its size, scale, spread and landscape context, as well as factors relating to the operational Rampion 1 wind farm, such as its increase in spread, aesthetic relationship and consistencies of scale in comparison to the Rampion 1 WTGs. The difference in perceived heights of the Proposed Development turbines in comparison to the Rampion 1 turbines is therefore considered and reported as part of the main assessment in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2, [APP-056] Section 15.10.** e. The Applicant would note that the magnitude of change has been assessed at representative viewpoints based on the magnitude of change factors and definitions set out in **Appendix 15.2: Seascape, Landscape and Visual Impact Assessment methodology [APP-158]** (**paragraph 1.6.16, Table 1-5**). The lateral spread of the Proposed Development in the horizontal field of view (HFoV) is one of several factors that are considered to arrive at an assessment of magnitude of change. In relation to HFoV specifically, an assessment is provided for each representative viewpoint assessed in detail in **Appendix 15.4: Viewpoint Assessment, Volume 4, [APP-160]**. Further clarification is provided in the **SLVIA MDS and Visual Design Principles Clarification Note** (Appendix 17) (Document Reference 8.31.17) (submitted at Deadline 1) regarding how the decrease in HFoV has influenced the design and contributed to reductions in magnitude of change between PEIR and ES assessments. i. The Applicant would note that in **Appendix 15.4: Viewpoint assessment, Volume 4 [APP-160]** each viewpoint, under the bullet point 'Field of View' includes a description and measurement (in degrees) of the overall HFoV affected by the Proposed Development as a proportion of the available view, as well as the additional HFoV that the Proposed Development adds beyond the HFoV already affected by Rampion 1 i.e. its additional contribution or extension to the wind farm developed HFoV. This additional HFoV is a key consideration in assessment judgements and needs to be considered as well as the overall HFoV of the Proposed Development (**Table 15-7**), since it provides a better indication of how much additional spread of WTGs the Proposed Development will contribute to the view (over and above that already affected by Rampion 1). In many cases, this additional lateral spread is considerably less, because either the eastern (Zone 6) array or the western extension area of the Proposed Development is viewed almost entirely behind Rampion 1, so only part of the array contributes to extending the lateral spread. In particular it should be noted that the additional lateral spread of the Proposed Development in views from the Sussex Heritage Coast is less than 10.5° degrees and is as low as 6.5° from Beachy Head - a narrower lateral spread than Rampion 1. ii. Further clarification is provided in the **SLVIA MDS and Visual Design Principles Clarification Note** (Appendix 17) (**Document Reference 8.31.17**) (submitted at Deadline 1) regarding how the design of the Proposed Development limits, as far as possible, the horizonal field of view of WTGs from the SDNP and the SHC. The Applicant welcomes Natural England's view that the inclusion of the 'wind farm separation zones' Design Principle successfully acts to significantly reduce seascape and visual effects on the most sensitive views from parts of the SHC within the SDNP. Given the spatial extent of the Order Limits to both the south and west of Rampion 1, the Applicant considers that it is not possible to provide clear lines of sight between Rampion

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		1 and all of the Proposed Development at the same time (i.e. in the same views). The Proposed Development design principle focused on providing wind farm separation zones between each of the western and eastern array areas with Rampion 1, so that they will (in particular key views) be viewed with a clear distinction and so that the apparent scale difference of the Rampion 1 and the Proposed Development WTGs would be minimised, insofar as possible. Further clarification is provided in the **SLVIA MDS and Visual Design Principles Clarification Note (Appendix 17)** (Document Reference 8.31.17) (submitted at Deadline 1) regarding how the 'wind farm separation zones' Design Principle acts to reduce seascape and visual effects on the views from the SHC and SDNP.
I10	**PART 2: The significance of impacts to protected landscapes from Rampion 2**. **Policy Test - The acceptability of further harm to the statutory purposes of the SDNP and special character of the SHC, and harm to the statutory purposes of the CHAONB and IoWAONB.** 3.7 Natural England considers that the adjustment of the MDS to reflect a smaller number of turbines will reduce the magnitude and geographic extent of the seascape, landscape and visual effects of Rampion 2 on designated and defined landscapes. 3.8 However, on balance the proposed Design Principles do not reduce Natural England's judgement regarding the significance of effects on designated landscapes. The Design Principles act mainly in the SHC area within the SDNP; a very small geographic area of the SDNP with the potential to be impacted by Rampion 2. 3.9 **We therefore advise that the project will significantly affect the statutory purposes of the SDNP and the special character of SHC, as well as the statutory purposes of the CHAONB and the IoWAONB.**	The Applicant welcomes Natural England's opinion that the adjustment of the MDS to reflect a smaller number of WTGs will reduce the magnitude and geographic extent of the seascape, landscape and visual effects of the Proposed Development on designated and defined landscapes. The seascape and visual impacts of the Proposed Development WTGs are assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]**. The Applicant recognises that significant effects on views, perceived character and certain special qualities of the designated landscapes have been identified, including on the SDNP and a limited part of the CHAONB. The spatial extent of the Proposed Development array area has been reduced and designed according to a set of SLVIA specific design principles (**Section 15.7** of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2**) **[APP-056]** which provide embedded environmental measures by reducing the magnitude of effects and minimising harm on the perceived seascape qualities and views, focusing particularly on the Sussex Heritage Coast area of the SDNP. It is the conclusion of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056] (paragraphs 15.15.9 – 15.15.74**) and the position of the Applicant, that the Proposed Development will not compromise the statutory purpose of the SDNP, CHAONB and IoWAONB designations. Further justification and clarification with regards the matter of statutory purpose of the SDNP and effects of the Proposed Development on the special qualities of the SDNP is set out in **Appendix 10 - Further information for Action Point 27 (document reference 8.25.10)** submitted at Deadline 1. The Isle of Wight Council are in agreement with this finding that the effects of the Proposed Development on the perceived character and views from the Isle of Wight will be not significant (as noted in **Table 15.7** in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]**).
I11	3.10 We advise that the Applicant provides further information as set out in Part 1 above to be able to advise in more detail regarding the likely magnitude of impact. However, on the basis of the material that has been provided, the advice below highlights where Natural	**Magnitude of change/significance of effects on SDNP** The Applicant notes that paragraphs 3.10a and 3.10b relate primarily to the magnitude of change/significance of effects on views from the SDNP and its special qualities.

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Ref	Natural England's Position	Applicant's Response
	England's judgements on the significance of these reductions, in EIA terms, differ from those of the Applicant. a. The effects of Rampion 2 on the SHC area within the SDNP (i.e. the views from Beachy Head and surrounding headland to Birling Gap) have been assessed as 'decreasing to Not Significant (Moderate) on perceived seascape setting in panoramic views from the coastal downs between Birling Gap and Beachy Head, where the effect of Rampion 2 reduces with distance, its narrower field of view and relative balance in apparent scale and spread'. The SLVIA concludes in paragraph 15.15.21 that 'Significant visual effects have been avoided in views from the eastern half of the Heritage Coast area of the SDNP between Beachy Head (Viewpoint 1) and Birling Gap (Viewpoint 2)'. Natural England considers that the Rampion 2 Design Principles have resulted in a reduction in the magnitude of effects in views from Beachy Head to Birling Gap. However, we still consider that these effects remain significant (major/moderate) and therefore disagree with the Applicant's assessment. This is because: i. The apparent heights of the Zone 6, western array WTGs (MDS) will be 0.569 degrees at Beachy Head and 0.6 degrees at Birling Gap. The Rampion 2 WTGs will appear to be nearly twice the height of the Rampion 1 WTGs from these locations. See Table 1 and Appendix 2 for further detail. • The Rampion 2 turbines will be frequently perceivable from this highly ensitive protected landscape and add a sense of industrialisation to one of the last coastal stretches in Sussex Bay where relative remoteness (despite the presence of the Rampion 1 turbines) can be experienced. • The experience of SDNP Special Quality 1 'Breath-taking views' is an important characteristic of this coastal stretch, and in part why the area was defined as a Heritage Coast in 1973. Impacts to this special quality here have been assessed as medium-low magnitude and Not Significant (moderate), despite the SLVIA concluding that significant harm will be caused to this quality. The impacts to SDNP Special Quality 1 along this coastal stretch are assessed by Natural England as significant (major/moderate). ii. Given the sensitivity of the landscape between Beachy Head to Birling Gap to change, Natural England does not agree that the Rampion 2 Design Principles are sufficient to remove the significance of landscape, seascape and visual effects from this ~2.5 mile stretch of designated and defined coastline. b. Natural England has not changed any original judgements of impact significance associated with the key representative viewpoints as presented within the R2 PEIR. It is not disputed that the recent design changes have, particularly between Beachy Head and Birling Gap, reduced landscape, seascape and visual effects on the SDNP and SHC. However, given the sheer size and lateral geographical spread of the R2 Project, and the effect that a development of this scale will have on the SDNP, this reduction of predicted impacts between Beachy Head to Birling Gap is not sufficient for Natural England to change any of our assessments of the significance of effects upon landscape, seascape and visual receptors (and by extension the SDNP) arising from R2.	A detailed assessment of the magnitude of change and significance of effect is provided for each representative viewpoint in the SDNP in **Appendix 15.4: Viewpoint assessment, Volume 4 [APP-160]**. The Applicant notes that Natural England's judgements differ on the significance of effects assessed for the eastern half of the Sussex Heritage Coast area of the SDNP, between Beachy Head (Viewpoint 1) and Birling Gap (Viewpoint 2). It is noted that Natural England agrees that there has been a reduction in the magnitude of effects in views from Beachy Head to Birling Gap, however it considers these do not tip below the significant effect threshold and that these effects remain significant (major/moderate). The Applicant's assessment is that the eastern half of the Sussex Heritage Coast of the SDNP is the key area that benefits from a reduction in effect, as a result of the design changes made to the Proposed Development between PEIR and ES. The revised spatial extent of the DCO order limits do not extend east of Rampion 1 and avoid the 'most sensitive areas' to the east of the Rampion 1 consented area and Zone 6 area, which were in closer proximity to the Suffolk Heritage Coast of the SDNP. This design evolution occurred since the PEIR stage and has resulted in the reduction of the PEIR Boundary to the proposed Order Limits (**Figure 15.1** of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 3**) **[APP-088]**. The Applicant's assessment in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]** and **Appendix 15.4: Viewpoint assessment, Volume 4 [APP-160]** is that these design changes have led to tangible reductions in the magnitude of change arising from the Proposed Development on views and scenic qualities of the Sussex Heritage Coast area of the SDNP, which was the focus of the design mitigation given its maritime coastline, heightened sensitivity and feedback from stakeholders. The magnitude of change was therefore assessed as reducing from medium to medium-low and the effects assessed as Not Significant (Moderate) on views and special qualities of the eastern half of the Sussex Heritage Coast area of the SDNP, between Beachy Head (Viewpoint 1) and Birling Gap (Viewpoint 2), as set out in **Appendix 15.4 Viewpoint assessment, Volume 4 [APP-160]** and summarised as the following reasons: • Increased distance away from these receptors from viewpoints within the Heritage Coast of the SDNP (by approximately 7km). Beachy Head is located 31.9 km and Birling Gap 28.8 km from the Proposed Development array area. • The vertical height/apparent scale of the proposed WTGs will be reduced at this distance and given the large scale of the seascape in the view. • Reduced and limited additional spread, with the eastern array of the Proposed Development adding only an additional 6.5 ° to the HFoV from Beachy Head and 7.3 ° from Birling Gap. This a narrower lateral spread than Rampion 1 and is relatively narrow additional portion of the wider panoramic sea views available. • The Proposed Development will introduce elements that are already characteristic in the receiving view, with a similar form to the Rampion 1 WTGs. • There is a relative balance in apparent scale and spread in perspective, with stark scale comparisons avoided through the separation between the distinct Rampion 1 and the Proposed Development arrays in these views. • The line of sight between the arrays allows the Proposed Development array to be viewed with less contrast and as a distinct element.

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	i. The area most benefitted by the Rampion 2 Design Principles covers a distance of ~2 miles between the very sensitive viewpoints of Beachy Head and Birling Gap. The SLVIA describes the aim of the Rampion 2 Design Principles as 'minimising harm to the special qualities of nationally designated landscapes, particularly the SDNP and the associated Sussex Heritage Coast'. However, the Design Principles Wind Farm Separation Zones and Separation Foreground do not aim to mitigate impacts to those areas of the SDNP encompassed by the ZTV (see other SDNP viewpoints).	All of these factors resulted directly from the design changes made to the Proposed Development DCO order limits between PEIR and ES through the design principles described in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 (Section 15.7) [APP-056]**. The Applicant's assessment is that there is a change in impact threshold within the Sussex Heritage Coast at Seven Sisters and Seaford Head with closer proximity, where the magnitude of change increases to medium and the effect becomes significant (major/moderate). This effect was observed in the field during site surveys and is reported in the **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]**. The influence of the weather on visibility was also found to be a notable factor in the visibility of Rampion 1 between the eastern and western half of the Sussex Heritage Coast. The significance of effects on views from the range of inland vantage points along the open tops of the downs is recognised in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]**, due in part to the lateral spread of the western extension area, however as noted in the response above, the Applicant considers that the 'Wind Farm Separation Zones' and 'Separation Foreground' design principles afford mitigation in certain viewing angles from the open downs of the SDNP (as per the viewpoint listed above), where a clear line of sight is evident between Rampion 1 and the Proposed Development western extension area. The Proposed Development will also be located at considerable distance (generally 20-30 km to the closest WTG) and will be experienced within a remote context setting beyond the intervening, non-designated and urbanised coastal strip between these open downs and the sea. It is the conclusion of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]** (paragraphs 15.15.9 – 15.15.74) and the position of the Applicant, that the Proposed Development will not compromise the statutory purpose of the SDNP designation. Whilst some harm would be caused to these qualities ('breathtaking views' and 'stunning, panoramic views to the sea'), this would not compromise the purpose of the SDNP designation, as the majority of its special qualities would be unaffected, and the natural beauty of the SDNP will remain and opportunities will still be present for understanding and enjoyment of the special qualities of the SDNP. Further justification and clarification with regards to the effects of the Proposed Development on the SDNP Special Qualities and the matter of statutory purpose of the SDNP is set out in **Appendix 10 - Further information for Action Point 27** (document reference 8.25.10) submitted at Deadline 1.
I12	c. Natural England does not agree that the Design Principles that have informed the Rampion 2 design have acted to remove the significance of effects to the SDNP in relation to Special Quality 1 or for Special Quality 3. This is because; i. There is no direct assessment of the impact that the Rampion 2 Design Principles have on the SDNP special qualities. This assessment should be made available within an updated Environmental Statement. ii. Critical evidence is missing from the SLVIA as described in Part 1 (1-5) of this response.	**Impacts on Special Qualities 1 and 3 of SDNP** The Applicant notes that paragraphs 3.10c relate primarily to the significance of effects on SDNP Special Qualities 1 and 3. The Applicant notes that a clear assessment of the effect of the Proposed Development (offshore array area) on the special qualities of the SDNP is provided in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]** (**Table 15-32**). It is the effect of the Proposed Development with its embedded design measures that requires to be assessed, not the impact of the design principles. Further clarification is provided in the **SLVIA MDS and Visual Design Principles Clarification Note** (Appendix 17) **(Document**

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	In addition, Natural England offers the following comments to inform an updated impact assessment; iii. **Special Quality 1**. In paragraph 15.15.40 of the SLVIA the Applicant states that 'Whilst significant harm would be caused to this quality ('breathtaking views' and 'stunning, panoramic views to the sea'), this would not compromise the purpose of the designation, as the natural beauty of the SDNP will remain and opportunities will still be present for understanding and enjoyment of the special qualities of the SDNP, and Rampion 2 will not therefore undermine the statutory purpose of the SDNP or compromise the purposes of its designation.' We do not agree with this reasoning. The Applicant concludes that the Rampion 2 project will cause significant harm to Special Quality 1, so it is illogical to conclude that it will not compromise the statutory purpose of the SDNP, which is to conserve and enhance natural beauty. Natural England agrees with the Applicant the Rampion 2 project will result in significant harm to SDNP Special Quality 1, particularly the 'stunning, panoramic views to the sea'. We highlight that Special Quality 1 is also experienced at multiple locations within the SDNP and is particularly prominent on the tops of the downs, as experienced for example at Devils Dyke (VP17) and Levin Down (VP32). iv. **Special Quality 3**. The Applicant has justified in Table 15-32 (page 397) that night-time lighting of Rampion 2 will 'result in relatively low change to the tranquillity experienced within the SDNP coastline' and has not offered a conclusion on the significance of the change to tranquillity at night-time 'around the tops of the downs' where 'tranquillity is greatest'. It is understood from Appendix 15.5, which unfortunately does not assess special qualities, that the representative night-time viewpoints from 'tops of the downs' were assessed as not significant due to the lighting being perceived as an 'extension of a familiar feature' i.e. Rampion 1. Natural England does not agree with this assessment, as the lateral spread of the Rampion 2 lighting will be perceived as a tripling of the extent of lighting that is already visible from Rampion 1. The Applicant's should bring forward evidence-based conclusions regarding the significance of the predicted changes on the night-time tranquillity of these specific areas.	**Reference 8.31.17)** (submitted at Deadline 1) regarding how the design of the Proposed Development limits, insofar as possible, the impacts on the SDNP and SHC. As noted above, it is the conclusion of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]** (**paragraphs 15.15.9 – 15.15.74**) and the position of the Applicant, that the Proposed Development will not compromise the statutory purpose of the SDNP designation. Whilst some harm would be caused to these qualities ('breathtaking views' and 'stunning, panoramic views to the sea'), this would not compromise the purpose of the SDNP designation, as the majority of its special qualities would be unaffected, and the natural beauty of the SDNP will remain and opportunities will still be present for understanding and enjoyment of the special qualities of the SDNP. Further justification and clarification with regards to the effects of the Proposed Development on the SDNP Special Qualities and the matter of statutory purpose of the SDNP is set out in **Appendix 10 - Further information for Action Point 27** (document reference 8.25.10) submitted at Deadline 1. This includes clarification in respect of Special Quality 1 and further assessment of the effects of night-time lighting of the Proposed Development on the tranquillity experienced within the SDNP at night (in respect of Special Quality 3). The Applicant has committed to C-266 "During operation, and where visibility conditions permit, the intensity of aviation warning lights will be reduced to no less than 200cd (in Accordance with the Air Navigation Order 2016), subject to the availability of a commercial system." (as secured by Part 2, Condition 8 (5) Schedules 11 & 12 of the **draft DCO [PEPD-009]**).
I13	d. Natural England's assessment on the special qualities of the CHAONB and IoWAONB remains unchanged from our s42 response. We advised that the westward expansion of WTGs will result in significant effects on the seascape setting of the CHAONB and more extensively the eastern portions of the IoWAONB at Bembridge Down and St. Boniface Down resulting in further loss of natural beauty for these designations. We have the following further comments to make: i. We note that there is no direct assessment of the impact that the Rampion 2 Design Principles have on the special qualities of the CHAONB and IoWAONB. We advise that introducing a separation distance between the Rampion 1 and Rampion 2 arrays could exacerbate landscape, seascape and visual impacts for the CHAONB and IoWAONB. However, the SLVIA does not indicate whether this is the case, and despite the redesign of the project our concern on this matter remains. We would like to see evidence submitted into the Examination as a matter of urgency, noting the apparent height values for viewpoints located within these designations.	**Impacts on Special Qualities of CHAONB and IOWAONB** The Applicant notes that paragraphs 3.10d and 3.10e relate to the significance of effects on the special qualities of the CHAONB and IOWAONB. With regards the CHAONB, the assessment in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2 [APP-056]** also finds, as summarised in its conclusions **(paragraphs 15.15.50 - 15.15.53)**, that the Proposed Development will result in no significant effects on the majority of special qualities of the CHAONB and that there is a very localised significant effect on the perceived '*unique blend of land and sea'* (SQ1) and *'significance of…. distant landmarks across land and water'* (SQ3) experienced from a limited area of the coastal edges/open seascape at the mouth to Chichester Harbour. It is the finding of the assessment and position of the Applicant that the Proposed Development will not compromise the statutory purpose of the CHAONB designation.

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	ii. We acknowledge the narrative provided in relation to night-time impacts to IoWAONB special quality 5 (Table 15-42). However, in the absence of a detailed assessment (inclusive of modelling work of potential lighting visual effects from both navigation and aviation lighting), we do not agree that effects can be discounted. Figure 15.25 (Zone of Theoretical Visibility for the aviation lighting of Rampion 2) indicates that all IoWAONB viewpoints, the maximum number of turbine aviation lights (34 – 42) are theoretically visible, and therefore this matter requires further assessment. e. We are disappointed that, despite our Section 42, the study area used for the 'Assessment of aviation and navigation night-time lighting' (Appendix 15.5) does not include an assessment of; i. effects on Special Quality 5 of the IoWAONB 'dark starlit skies'; ii. effects on the Special Quality 5 of the CHAONB 'overall sense of wilderness within the seascape' iii. effects on landscape character. We advise that the Applicant should carry out these assessments, or submit evidence into the Examination to provide a rationale for excluding assessments (a) to (c), and how, in the absence of an assessment on night-time landscape character, how Appendix 15.5 can conclude that 'The proposed aviation and marine navigation lighting will not result in effects on landscape character'. (SLVIA paragraph 8.1.24)	With regards the IoWAONB, the assessment in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** **[APP-056]** also finds, as summarised in its conclusions (**paragraphs 15.15.60 – 15.15.74**), that the Proposed Development will result in not significant effects on views or special qualities of the IoWAONB. The Isle of Wight Council are in agreement with this finding that the effects of the Proposed Development on the perceived character and views from the Isle of Wight will be not significant (as noted in **Table 15.7** in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** **[APP-056]**).

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Table 4-15 Applicant's response to Natural England - Appendix J (Terrestrial Ecology and Nature Conservation)

Ref	Section / Subject	Natural England's Comments	RAG	Recommendations	Applicant's Response
Project Parameters					
J1	Summary and Conclusions				The Applicant acknowledges this summary of advice from Natural England. Please refer to the Applicant's responses in **references J2 to J132** below for detailed responses.
J2	Project Parameters	Natural England acknowledges that the majority of the onshore project parameters have been clearly defined, with the exception of sections of the onshore cable route, where trenchless crossing under ecologically and visually sensitive locations has been proposed as mitigation.		N/A	This is a summary comment from Natural England. Further information is provided in **references J3, J4 and J6**.
J3	Project Parameters	Natural England notes that RED has not submitted an options appraisal, for if trenchless methods (such as Horizontal Directional Drilling (HDD)) were to fail. RED has stated that an additional consent would be required if an alternative solution was required. Natural England advise that contingency measures should be assessed within the Environmental Statement, in the event that trenchless crossings are not feasible at ecologically and visually sensitive sites.		N/A	Trenchless crossing (such as Horizontal Directional Drilling (HDD) is a mitigation that has been used routinely for linear projects (electrical transmission cables and pipelines (e.g., gas, oil and water) for both large infrastructure and smaller scale projects. Trenchless crossing has been used frequently to cross a range of sensitive ecological features including designated sites, ancient woodland, rivers and other priority habitats and make landfall for both offshore wind farm transmission cables and electrical interconnectors. For example, an HDD crossing of 550m through chalk substrate, with a sizeable change in elevation (80 to 90m difference) was successfully completed at Dunstable Downs on the Kensworth to Rugby Pipeline project for CEMEX in 2008 (including crossing part of Dunstable and Whipsnade Downs Site of Special Scientific Interest (SSSI)). It is also notable that HDD within chalk substrate was carried out successfully on the route of the transmission cable for the Rampion 1 Offshore Wind Farm, as was an HDD to make landfall. The approach to minimising and effectively managing the risks of trenchless crossings is outlined in the **Outline construction method statement [APP-255]** and the **Outline Code of Construction Practice [PEPD-033]** secured via Requirement 22 and 23 of the **Draft Development Consent Order [PEPD-009]**) respectively. Further, consideration of the risk is provided in Section 22.9 of **Chapter 22: Terrestrial ecology and nature conservation,**

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Ref	Section / Subject	Natural England's Comments	RAG	Recommendations	Applicant's Response
					Volume 2 of the Environmental Statement [**APP-063**]. Commitment C-5 (**Commitments Register [APP-254]** (provided at Deadline 1 submission) has been updated at the Deadline 1 submission to clarify that Horizontal Directional Drill (HDD) or other trenchless technology will be deployed in accordance with Appendix A: Crossing Schedule of the **Outline of Construction Practice [PEPD-033]** secured via Required 22 within the **Draft Development Consent Order [PEPD-009]**. The Applicant will not switch to open-cut trenching at these locations. The appropriate realistic Worst-Case Scenario has been assessed in the ES. Note, that in the unlikely event that another trenchless technology is deployed at a specific crossing, this would require demonstration that there are no materially new or materially different environmental effects. Any change will need to be approved by the relevant planning authority through amendment to the stage specific Code of Construction Practice and Crossing Schedule.
J4	Natural England's position on Worst Case Scenario (WCS)	The rationale and parameters for the selection of the realistic Worst-Case Scenarios (WCS) for the development is generally clear and is based on the project parameters. Natural England however notes that the feasibility of trenchless crossings has not been assessed and evidenced in any detail. Natural England advise that there is a risk that there is an over reliance placed on trenchless crossings (HDD) of mitigating impacts to ecologically and visually sensitive locations. As mentioned above, Natural England advises that contingency measures should be assessed within the Environmental Statement, in the event that trenchless crossings are not feasible at ecologically and visually sensitive sites.		N/A	Concern about trenchless crossing feasibility and the assessment of the appropriate realistic WCS is addressed above in **reference J3**. The Applicant has a high degree of confidence that all trenchless crossings on the Crossing Schedule in Appendix A of the **Outline Code of Construction Practice [PEPD-033]** are feasible, including those at ecologically and visually sensitive sites. The **Outline construction method statement [APP-255]** provides further information regarding the detailed design of the trenchless crossings in Section 3.4 and the further information required to inform this (e.g., ground investigation). The detailed design of a trenchless crossing will be undertaken within the established parameters assessed in the ES as detailed in 4.5.27 of **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** and secured in Schedule 1 Part 3, Requirement

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					23 of the **Draft Development Consent Order (DCO)** **[PEPD-009]** to be approved by the relevant planning authority in consultation with the statutory nature conservation body. Any assessment required at the detailed design stage would be undertaken in accordance with the established methodologies outlined in the ES. However, consideration of risk arising from the use of HDD is provided in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**, in particular paragraphs 22.9.43 to 22.9.46.
Baseline Characterisation					
J5	Data suitability, baseline characterisation and data gaps	Natural England consider the data and baseline characterisation is broadly suitable, however additional clarification is required on whether additional pre-construction surveys will be provided for the section of the route which passes through the SDNP (from the A27 up to Sullington Hill. We raise this, as this section falls outside of the original DCO scoping boundary, which has resulted in a number of protected species survey sites no longer within or adjacent to the proposed DCO Order Limits. Our detailed comments cover these points in more detail.		N/A	Additional survey data for the area between the A27 and Sullington Hill has been collected since submission of the DCO Application in August 2023. Further bat survey data is provided in **Appendix 22.18: Passive and active bat activity report 2023, Volume 4** of the ES [**PEPD-029**] and hazel dormouse survey data provided in **Appendix 22.19: Hazel dormouse report, Volume 4** of the ES [**PEPD-030** which were provided at Pre-Examination Procedural Deadline A on 16 January 2024]. Within the DCO Application and described in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]** habitat surveys, badger survey, water vole and otter survey, breeding bird survey and a preliminary ground level roost assessment for bats were detailed for the area between the A27 and Sullington Hill. However, due to seasonal constraints further bat activity survey and hazel dormouse survey were ongoing at the time of DCO Application. This has now been completed and was provided at Pre-Examination Procedural Deadline A on 16 January 2024. The results are broadly similar to those identified previously and do not alter the outcome of the Ecological Impact Assessment in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**.
Environmental Impact Assessment					

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J6	Identified impacts	Natural England is broadly satisfied that the majority of impacts are identified and assessed, however some areas where Natural England advise further clarity is required on the identification and assessment of impacts are outlined within the Detailed Comments table. This includes further clarity regarding the impacts on Climping Beach SSSI and areas of ancient woodland from associated risks of HDD, as no detailed HDD feasibility assessments have been undertaken to date, which incorporate local ground conditions, in order to robustly quantify localised risks associated with HDD operations (i.e. likely occurrence of sink holes, frac out, bentonite breakout etc). Natural England advise that continency measures and their associated impacts should be further assessed, if detailed HDD feasibility assessments are to be conducted post DCO acceptance.		N/A	Concern about trenchless crossing feasibility is addressed above under **reference J3**. The Applicant has a high degree of confidence that all trenchless crossings in the Crossing Schedule in Appendix A of the **Outline Code of Construction Practice (CoCP)** **[APP-224]** which is secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]** are feasible, including those at ecologically sensitive sites. **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**, paragraph 22.9.43 to 22.9.46 includes the expected scale and approach should a frac out occur at Climping Beach Site of Special Scientific Interest (SSSI). The risk is identified as being very low based on the location of the entry and exit points that ensure that the drill head will be at depth when underneath the Climping Beach SSSI (also see Appendix 6 – Further information for Action Point 7 – Horizontal Directional Drilling at Climping Beach (Document Reference: 8.25.6) provided at Deadline 1 submission). The design of the Proposed Development and the measures to minimise and mitigate effects results in no significant effects on either Climping Beach SSSI or ancient woodland being predicted in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**.
J7	Cumulative Effect Assessment (CEA)	Natural England agree with the conclusions of the cumulative effect assessment.		N/A	The Applicant welcomes Natural England's agreement with the conclusions of the cumulative effect assessment.
J8	Assessment Conclusion	Natural England generally concurs with the assessment conclusions, however we advise that there is a risk of an over reliance placed on the feasibility of HDD as a mitigation measure, to avoid significant harm to sensitive ecological and visual receptors. As mentioned above, we advise that continency measures and their associated impacts should be further assessed, if detailed HDD feasibility assessments are to be conducted post DCO acceptance.		N/A	Detailed trenchless crossing (such as horizontal directional drilling (HDD)) feasibility assessments are to be conducted post-DCO consent. For further response regarding trenchless crossing see answers to **references J3** and **J6**. The mitigation hierarchy has been and will continue to be taken into account during the

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		Natural England advise RED that the mitigation hierarchy must be followed. Furthermore, micro-siting of cable route should be considered if sensitive habitats can be avoided.			design process. Avoidance is the first objective, followed by measures to minimise and mitigate effects with compensation only necessary where other design factors (e.g. engineering feasibility etc.) result in effects on ecological features. This has been followed to date to limit effects on biodiversity as described in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063].** However, at this stage, there are still options to further reduce effects during the detailed design stage (e.g. aiming for existing gaps in hedgerows to minimise loss, micro-siting around hedgerow standards or field trees etc.). The detailed design will seek to reduce the level of effect wherever possible within the proposed DCO Order Limits. This will include things such as micro-siting, altering standard construction set up (e.g. avoiding vegetation removal by avoiding soil storage in certain areas) and methods of working (e.g. type of plant). These measures will be described within the stage specific Code of Construction Practice and the Landscape and Ecological Management Plan that are secured through Requirements 22 and 12 respectively of the **Draft Development Consent Order** [**PEPD-009**].
Habitats Regulations Assessment					
J9	Screening	Natural England generally concurs with the conclusions of the HRA screening. However, with regard to likely impacts to Arun Valley SPA, SAC and Ramsar site from excessive water abstraction, we advise that water use within the Sussex North Water Supply Zone (SNWSZ), during the construction phase, should be assessed through a routine screening exercise. This is to determine if water use during the construction phase is likely to have a significant effect (LSE) on the Arun Valley designated sites.		N/A	All water to be used in the construction phase within the Sussex North Water Supply Zone including for welfare facilities and to enable trenchless crossing (such horizontal directional drilling (HDD)) will be imported into the area with no mains connections proposed. Therefore, it is possible to screen out water neutrality for the Arun Valley Special Protection Area (SPA), Special Area for Conservation (SAC) and Ramsar site during the construction phase.
J10	Assessment	Further details should be submitted to consider how water neutrality for the operational phase could be demonstrated, without overly relying on a strategic mitigation scheme which is yet to become operational. Further			For clarity, the small operational water use is only envisaged at the onshore substation and will be meeting the demands of basic welfare

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		consideration of how suitable water neutrality mitigation can be suitable secured should be considered and provided by RED. In addition, we request further clarity on how impacts upon functionally linked land (FLL) for APP-254 has been assessed, as it is not clear if embedded mitigation measures (APP-254) have underestimated the length of time that it will take to reinstate the FLL back to previous condition and agricultural use. We also seek further clarity on how the foraging range of the Northern Pintail has been estimated. Our further detailed advice can be found within the detailed comments section.			facilities. At this stage, it is likely to consist of toilet, faucet and shower for irregular use (i.e. the onshore substation is not permanently manned). The Applicant can clarify that fire suppression systems at the onshore substation can be sourced from water tanks (i.e. not mains supplied) with reliance on the fire services to attend as soon as possible. Potable water use will also be brought into the onshore substation site (e.g. via water dispensers sourced from outside of the Sussex north water zone) further reducing any water requirements. Requirement 8 (2) of the **Draft DCO** **[PEPD-009]** sets out that measures necessary to ensure water neutrality are part of the detailed design for the onshore substation. The Applicant presented dedicated commitments in relation to water neutrality within Section 26.7 of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**. These mitigations are secured by a DCO requirement (Requirement 8 (2)) so that further work can only be progressed once the detailed design of the onshore substation has been developed. Commitment C-260 in the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission), will ensure that water usage at the onshore substation would be minimised through reuse / recycling, and this is secured via the aforementioned DCO requirement. In order to offset any negligible residual footprint, imports could come from outside of the Sussex North Water Supply Zone, either via a connection to the nearby neighbouring zone or water tankers. Should the strategic scheme be available, this also provides an option to meet water neutrality. A firm commitment has been secured towards water neutrality, with flexibility as to the exact means by which this will be achieved. It is also noted by the Applicant that the strategic scheme of Horsham District Council (HDC) is expected to be operational in early

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					2024, as described in a recent planning appeal decision[3]. Furthermore, the Southern Water demand reduction programme is likely to be available to contribute to water neutrality in new development proposals in 2025. With regards reinstatement of functionally linked land (FLL), it is noted that the commitment is to begin reinstatement of land within a two-year period of temporary losses occurring, as opposed to noting that all habitats will be reinstated to target condition within a 2 year period. Much of the habitat within the area defined as functionally linked land would be expected to reach target condition rapidly following reinstatement works given its intensively managed agricultural nature. The foraging range of Northern pintail (referred to as pintail within rest of the Applicant's responses) was taken as the largest distance quoted in studies referenced in Johnson et al (2014). Although this distance was recorded in the United States of America (USA), it has been used within the assessment for Rampion 2 as it is the most precautionary. Should the only European based mean flight distance have been used (1.3km recorded in France) then no pintail associated with the Arun Valley Special Protection Area (SPA) and Ramsar site would be expected in the vicinity of the Proposed Development as the closest FLL within the proposed DCO Order Limits is approximately 9km away.
J11	Incorporated Mitigation	Natural England considers that the embedded mitigation identified in the RIAA (APP-038) are broadly acceptable with respect to impacts on designated nature conservation sites. We however advise that clarity should be provided on measures (i.e. APP-254, commitment C-103) which relate to reinstatement of temporary lost FLL of the Arun Valley SPA and Ramsar site, as we recognise that full reinstatement will likely take longer than the stated commitment, of a maximum of two years from initial loss.		N/A	Commitment C-103 in the **Commitments Register [APP-254]** (provided at Deadline 1 submission) is definitive that restoration in the vast majority of functionally linked land (FLL) will begin within 2 years. It is only at the landfall, temporary construction compounds, joint bays, grid connection point and the onshore substation at Oakendene where this may not occur (the definition of FLL within the **Report to**

[3] Appeal A Ref: APP/Z3825/W/22/3308455 and Appeal B Ref: APP/Y9507/W/22/3308461 decision dated 6 October 2023

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		Natural England note that the wording of securing mechanism is ambiguous such as "where possible" and "as far as practicable" are still used and relied on in a number of embedded mitigation measures. We advise that greater detail of embedded mitigation measures which utilise these ambiguous terms, should be provided, to greater fully understand the risks and likely success rates of these mitigation measures.			**Inform the Appropriate Assessment** [**APP-038**] includes the landfall and a small number of joint bays). The FLL present is generally modified grassland and arable land, both of which can be restored to original condition rapidly. The commitment is not noting that the restoration of any habitat will be complete (I.e. reaching target condition) within 2 years. Rather reinstatement work will have begun in a structured way with management implemented in the establishment phase. This is secured through the Landscape and Ecology Management Plan pursuant to Requirement 12 of the **Draft Development Consent Order** [**PEPD-009**].
J12	Appropriate Assessment Conclusion	With respect to the onshore elements of the project, Natural England does not disagree with the summary of potential effects on the Arun Valley SPA, SAC and Ramsar site. However, as mentioned above and in our detailed comments, further clarity and information is required to; • determine if full reinstatement of temporary lost FLL will take several years to complete, as opposed to the stated maximum of two years. • demonstrate how suitable water neutrality mitigation can be suitable secured, as there is over reliance on a strategic mitigation scheme which is yet to become operational. • provide greater detail of proposed mitigation measures before conclusion of no adverse of effect on integrity of designated sites can be concluded		N/A	As noted above in the response to **reference J11**, commitment C-103 in the **Commitments Register [APP-254]** (provided at Deadline 1 submission) is not stating that reinstatement will achieve target condition within 2 years. Rather it is stating that works to establish habitats will begin within this time frame. Commitment C-103 was included following discussions with Natural England and others (see Section 22.3 Evidence Plan Process in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**) regarding delays to reinstatement for the Rampion 1 Offshore Wind Farm to provide certainty about timescales for reinstatement. Reinstatement of functionally linked land (FLL) as defined in the assessment is required, but is not necessary to ensure a conclusion of no adverse effects on integrity. FLL is defined by Natural England as '*land or sea occurring outside a designated site which is considered critical to, or necessary for, the ecological or behavioural functions in a relevant season of a qualifying feature for which a Special Area of Conservation (SAC)/Special Protection Area (SPA)/Ramsar site has been designated. These habitats are frequently used by SPA species and supports the functionality and integrity of the designated sites for these features*.' (Natural England, 2021 – *NECR361 Edition 1*

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					Identification of Functionally Linked Land supporting SPAs waterbirds in the North West of England). Typically, FLL is identified for waterbirds as suitable habitat that lies within a typical foraging distance flown on a daily basis from a known roost to feed. The FLL identified within the **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement (ES) **[APP-063]** and the **Report to Inform the Appropriate Assessment** **[APP-038]** is highly precautionary. It was defined based on identifying habitats within or close to the proposed DCO Order Limits without reference to flight distances as the design process of the Proposed Development was at an early stage and no winter bird survey work had been completed. The FLL identified for the Proposed Development was not altered based on winter bird survey results or design changes to the Proposed Development to ensure sufficient precaution within the assessments provided. The Arun Valley Special Protection Area (SPA) and Ramsar site is 4.8km at the closest point to the proposed DCO Order Limits, with the closest suitable habitat for designated features (i.e. that which could be functionally linked) being in excess of 9km away in the Arun Valley (west of Littlehampton and Lyminster) and over 13km away in the Adur Valley (north west of Henfield). On the basis that the roosts for the populations on the Arun Valley SPA / Ramsar site being within the designated site the FLL identified for assessment for Rampion 2 would not typically qualify based on usual foraging distances. Typical foraging distances (taken from *Johnson, W.P., Schmidt, P,M. Taylor, D, (2014) Foraging flight distances of wintering ducks and geese: A review. December 2014 Avian Conservation and Ecology 9 (2): pp1-19*) for Eurasian wigeon (2.5km), shoveler (2.5km) and teal (3.8km) suggest that they would usually be foraging much more closely to the SPA / Ramsar site boundary than close to any of the proposed working areas.

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					Pintail are shown in Johnson et al., 2014, as foraging up to 18.5km (maximum distance recorded from 17 studies) from roost, although this is from a study reported from the United States of America (USA) and 1.3km from a study in France. Within the DCO Application documents including the **Report to Inform the Appropriate Assessment [APP-038]**, the conservative 18.5km distance was used as a precaution. Alternatives to this approach would be to use the mean (7.4km) or median (5.0km) distance of the studies referenced by Johnson et al., 2014 or rely on the single European example (1.3km). Assuming the mean is used as a reasonable assumption of typical foraging distance pintail would usually be foraging much more closely to the SPA / Ramsar site boundary than close to any of the proposed working areas. Two years of winter bird survey were undertaken in areas that were noted, on a precautionary basis, as FLL in the assessment (see **Appendix 22.14: Onshore winter bird report 2020 – 2022, Volume 4** of the ES **[APP-192]**). The data shows that within the Arun Valley (including the coastal strip) very limited use of Climping Beach, arable fields behind the sea defences and the coastal and floodplain grazing marsh west of Littlehampton and Lyminster was made by waterbirds. The only aggregations noted regularly were wigeon on waterbodies close to the church of St Mary Magdalene, Lyminster. These waterbodies are approximately 300m north of the proposed DCO Order Limits and are heavily screened from the construction area by scrub fringing the waterbodies, farm buildings and residential development. At the coast numbers of key species were small, recorded irregularly and often were of birds flying along the coast as opposed to using the area for foraging. This suggests that the area assessed as being FLL in the Arun Valley is not critical or necessary for the ecological or behavioural functions in a relevant season of a qualifying feature for which

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					the Arun Valley SPA/Ramsar site has been designated. In the Adur Valley wigeon, teal, pintail and shoveler were all recorded. Shoveler and pintail were recorded on a single occasion each only and in small numbers suggesting that they are not reliant on this area, regardless of whether or not they form part of the population for the Arun Valley SPA/Ramsar site. Wigeon and teal were noted more regularly, sometimes in large number (up to 600 wigeon and 151 teal were recorded on 19 January 2021) although numbers fluctuated. These birds all used flooded fields, with water covering pasture, arable fields, ditches and ruderal vegetation. Wigeon usually eat seeds by day (within water) and move onto open grassland at night to feed, whilst teal mainly eat seeds from the water surface or just below it. Within the FLL of the Adur Valley (defined as Flood Zones 2 and 3) there are large areas of potentially suitable habitat. The area of FLL within the proposed DCO Order Limits in the Adur Valley is approximately 9.3ha, with the realistic worst case scenario (based on a 40m working width plus access route, but discounting area over which a trenchless crossing is proposed) being the temporary loss of 3.2ha of agricultural grassland. This is less than 1% of the available habitat (within Flood Zones 2 and 3) between Steyning and Partridge Green. In the realistic worst case scenario, temporary works would have been undertaken outside of the winter period and the soil dressed back although no vegetation has been reestablished. For teal who are feeding on seeds and other items on or just below the water, this should present no change, for wigeon coming out of the water to feed on grassland at night (assuming these areas are not flooded) this would represent a very small reduction in available habitat. This is regardless of whether or not the wigeon noted are also reliant on the Arun Valley SPA/Ramsar site (over 13km away), given the large geographical separation between the areas. Bewick's swans were not recorded within or close to the proposed DCO Order Limits and

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					historical data from the Sussex Ornithological Society shows that they regularly occur well away from the proposed DCO Order Limits (around Burpham and Wepham) and can therefore be discounted. Ruff were not recorded by winter bird surveys and can also be discounted. In summary, the FLL identified within the assessment (see **Report to Inform the Appropriate Assessment [APP-038]**) was done so on a highly precautionary basis given that birds using the areas are unlikely to be reliant on these and the Arun Valley SPA/Ramsar site given geographical separation. Even if the land is functionally linked, any potential effect would be small and confined (based on field survey data) to wigeon in the Adur Valley. These birds have considerable opportunity to forage in a range of suitable fields in this area. Finally, commitment C-103 in the **Commitments Register [APP-254]** (provided at Deadline 1 submission) ensures that reinstatement will occur within 2 years (noting target condition would take further time to reach) of the loss in these areas. It is also noted that commitment C-117 in the **Commitments Register [APP-254]** (provided at Deadline 1 submission) avoids works on areas assessed as FLL to minimise any potential disturbance. Commitments C-103 and C-117 are secured in the **Outline Code of Construction Practice [PEPD-033]** which is secured through Requirement 22 of the **Draft Development Consent Order [PEPD-009]**. See response to **reference J10** for position regarding water neutrality.
Mitigation Summary that must be secured in the DCO/DML					
J13		• EPS mitigation licences required – bats, badger, District Level Licence (DLL) - Great Crested Newt (GCN) and water vole (if found during pre-construction surveys). • Pre-construction surveys and appropriate mitigation measures (if required pre/post installation) to be submitted to LPA and agreed in consultation with NE for reptiles, birds, badger, bat roost potential surveys for		N/A	In summary, the Applicant agrees to the set of mitigation related requests in this section. The Applicant agrees that European Protected Species licences and other derogation licences may be required for the following species:

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		structures (includes trees), breeding birds, water voles, invertebrates and for follow up surveys to be carried out where required, e.g., bat activity surveys, bat hibernation surveys, survey of receptor site for reptiles if translocation is required. • Post installation monitoring surveys for where EPS mitigation licences are required. Reasonable Avoidance Measures (RAMS) for GCN and reptiles. Post-construction surveying/monitoring for designated habitats and species that will be affected, such as hedgerows used by bats, grasslands, ponds, GCN, cereal field margins and for reports to be submitted. Where mitigation is proven not effective further mitigation measures may be required and will need to be approved. Methodology and any remediation to be agreed with the LPA and in consultation with Natural England. • Landowner and stakeholder agreement of land for mitigation – to be secured. If mitigation and compensation are required outside of the DCO boundary this also needs to be agreed with landowners and secured in the DCO. • • If translocation of a species is required, the habitat areas needs to be suitable and area secured. • Protection areas (buffer areas) of habitats particularly SSSIs, ancient woodland and veteran trees to be secured. • With respect to the above comments, Natural England advises consultation and agreements with landowners and stakeholders is required to secure mitigation. We remind the Applicant the mitigation hierarchy must be followed with the commitment to BNG additional to this.			dormouse, bats, great crested newt (via a district level licence), water vole and badger dependent on detailed design and future survey results. The Applicant agrees that a range of pre-commencement surveys will be required to inform detailed design and to ensure measures within the detailed stage specific Code of Construction Practice documents are appropriate. These surveys are secured through a range of commitments (C-203, C-208, C-209, C-210, C-211, C-214 and C-215) detailed in the **Outline Code of Construction Practice** [**PEPD-033**] which is secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. The Applicant agrees that Reasonable Avoidance Measures for great crested newt and reptiles will be implemented through an Ecological Clerk of Works (commitment C-207), as described in the **Outline Code of Construction Practice** **[PEPD-033]** which is secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. Monitoring as part of any protected species licence will be agreed with Natural England, with monitoring of reinstated habitats described in the **Outline Landscape and Ecology Management Plan (LEMP)** **[APP-232]** which is secured through Requirement 12 of the **Draft Development Consent Order** **[PEPD-009]**. This includes the scope for adaptive management measures should difficulties in habitat establishment be identified. All mitigation required can be delivered within the proposed DCO Order Limits. All compensation required to deliver protected species licensing can be delivered within the proposed DCO Order Limits. Compensation for habitats (e.g. to reach 'no net loss') is to be delivered in line with the UK Government's approach to biodiversity net gain (BNG) (see **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]**

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					which is secured through Requirement 14 of the **Draft Development Consent Order [PEPD-009]**). It is agreed that any areas for translocation will require suitable habitat within the proposed DCO Order Limits. The most likely need is for reptiles at the onshore substation and grid connection points where indicative landscape plans in the **Outline Landscape and Ecology Management Plan (LEMP) [APP-232]** provide the opportunity. Provision of landscaping at the onshore substation areas is secured by Requirement 12 in the **Draft Development Consent Order [PEPD-009]**. Buffer areas for ancient woodland and veteran trees are secured through commitments C-174 and C-216 as outlined in the **Outline Code of Construction Practice [PEPD-033]** which is secured through Requirement 22 of the **Draft Development Consent Order [PEPD-009]**. Protections for the Climping Beach SSSI are provided via commitments C-112 and C-278 in the **Outline Code of Construction Practice [PEPD-033]** and **Outline Construction Method Statement [PEPD-255]** in Requirements 22 and 23 of the **Draft Development Consent Order [PEPD-009]** respectively. The Applicant is confident that the necessary mitigation and compensation (to deliver with respect to protected species licensing) can be provided for within the proposed DCO Order Limits and that the **Draft Development Consent Order** [**PEPD-009**] provides the means to secure this.
Document used: [APP-034] 5.5 Cable and Grid Connection Statement					

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J14	1.7.53 to 57	Natural England note that impacts of lighting to the South Downs National Park's dark skies has not been referenced.		Increase in lighting in the SDNP during the construction phase should be mitigated against if the impact cannot be avoided in the first instance.	It is noted that temporary construction lighting will be used for short periods only at discrete locations (e.g. trenchless crossing compounds during the drilling process). This lighting will be designed in accordance with guidance from the Bat Conservation Trust and Institute of Lighting Professionals (2023) as per commitment C-105 in the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission). Commitment C-105 is secured in the **Outline Code of Construction Practice** **[PEPD-033]** which is secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. The effects of construction lights have been considered as part of **Appendix 18.2: Viewpoint Analysis, Volume 4** of the Environmental Statement (ES) **[APP-168]** and from some visual receptors **Appendix 18.4: Visual Assessment, Volume 4** of the ES **[APP-170]**. Drawing from this information, 'dark skies' were considered as part of the assessment of South Downs National Park (SDNP) Special Quality 2 (SQ2) in **Appendix 18.4: Landscape Assessment, Volume 4** of the ES **[APP-169]** – Noting that there would be no effect on the South Downs International Dark Sky Reserve or 'dark skies' within the SDNP. This conclusion was based on the fact that none of the Dark Skies Discovery Sites or core areas of the Dark Sky Reserve are located within the landscape and visual impact assessment (LVIA) Study Area (for cross reference see Figure 15.12 in **Chapter 15: Seascape, landscape and visual impact assessment – Figures (Part 1 of 8), Volume 3** of the ES **[APP-088]**). The nearest of these being located beyond 10km distance from the proposed DCO Order Limits. The onshore cable corridor is however routed through the "*E1a - 2km Buffer Zone & Intrinsic Rural Darkness*" area and as such the recommendations of the SDNP Local Plan Policy SD8: Dark Night Skies have been incorporated into Commitments C-66 and C-200 in the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission).

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					The SDNP Local Plan Policy SD8: Dark Night Skies includes specific lighting requirements for developers (South Downs National Park Authority (SDNPA), 2019), and states: "*Wherever possible new development will be required to avoid installing lighting. If new lighting is unavoidable steps must be taken to avoid its impacts on our dark night skies by making sure that it's properly designed, taking into consideration direction of lighting and number of lumens emitted. If that is not possible, adverse impacts of lighting will be required to be mitigated – for example, by installing timing restrictions and making sure that the light emitted is of a colour that won't disturb wildlife*." Therefore, the focus has been on the commitments in the **Commitments Register [APP-254]** (updated for the Deadline 1 submission) and the **Outline Code of Construction Practice** [**PEPD-033**]. In order to avoid construction lighting where possible, core working hours for construction of the onshore components will be 08:00 to 18:00 Monday to Friday, and 08:00 to 13:00 on Saturdays. Apart from specific circumstances that are set out in the **Outline Code of Construction Practice** [[**PEPD-033**], where extended and continuous periods of construction are required. Prior to and following the core working hours Monday to Friday, a 'shoulder hour' for mobilisation and shut down will be applied (07:00 to 08:00 and 18:00 to 19:00). The activities permitted during the shoulder hours include staff arrivals and departures, briefings and toolbox talks, deliveries to site and unloading, and activities including site and safety inspections and plant maintenance. Such activities shall not include noise generating activity including use of heavy plant or activity resulting in impacts, ground breaking or earthworks (commitment C-22 in the **Commitments Register** [**APP-254**] provided at Deadline 1 submission).

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					Although the detail of any lighting design for all temporary and permanent lighting will be developed once contractors are appointed, the principles of any lighting regime are set out in **Chapter 4: The Proposed Development, Volume 2** of the ES [**APP-045**]. Where required, construction lighting will be limited to directional task lighting positioned to minimise glare and nuisance to residents and walkers within the SDNP and informed by British Standard (BS) EN 12464-2:2014 Lighting of outdoor workplaces (British Standards Institution (BSI), 2014) and guidance provided by the Chartered Institution of Building Services Engineers (CIBSE) Society of Light and Lighting, The Bat Conservation Trust and the Institution of Lighting Professionals (C-200 in the **Commitments Register** [**APP-254**] provided at Deadline 1 submission). These measures will all be secured via the stage specific CoCPs to be submitted pursuant to Requirement 22 of Part 3, Schedule 1 of the **Draft Development Consent Order [PEPD-009]**.
Document used: [APP-038] 5.9 Report to Inform Appropriate Assessment					
J15	5.3.4	Natural England seek clarification as to why information has not been provided relating to traffic modelling/air quality.		Natural England seek clarification of this point. We are of the understanding that air quality impacts to designated sites have not been considered within the Air Quality (AQ) chapter or RIAA, as air quality impacts were scoped out of having a likely significant effect.	The effects of emissions associated with construction traffic and plant on all relevant ecological features (European sites and Sites of Special Scientific Interest (SSSIs)) were scoped out as confirmed by the Planning Inspectorate in reference 5.5.5 in Section 5.5 of the **Appendix 5.1: Planning Inspectorate's Scoping Opinion, Volume 4** of the Environmental Statement **[APP-125]**. This is referenced in the **Report to Inform the Appropriate Assessment [APP-038]** in paragraph 5.3.4. The Planning Inspectorate states in reference 5.5.5 in Section 5.5 of the **Appendix 5.1: Planning Inspectorate's Scoping Opinion, Volume 4** of the Environmental Statement **[APP-125]**:

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Ref	Section / Subject	Natural England's Comments	RAG	Recommendations	Applicant's Response
					'*The Inspectorate agrees that this matter can be scoped out based on the temporary and transient nature of the effect, the location of the nearest European sites and SSSI's and the limited amount of traffic likely serving construction at any single location.* *The Inspectorate also notes that this approach in line with advice from Natural England as cited in paragraph 6.6.68, and Natural England have not expressed concern in their scoping consultation response relating to the Proposed Development.*'
J16	7.2.11	Natural England note that a foraging range of ~18km (utilised by the northern pintail) has been stated, which has been used to assess the available functionally linked land (FLL), and then compared against the portion of the FLL which will be temporarily impacted during the construction phase. The ~18km foraging range appears to have been selected from a USA study from SW Louisiana, out of a comparison of 16 other foraging ranges studies (Johnson et al., 2014). Of this data set, "~18km" appears to be the highest figure chosen, whilst a study in France evidenced a foraging range of 1.3km.		Natural England question why "~18km" was chosen to estimate the likely foraging range of pintails, when the France figure may be more representative, due to closer proximity. A much lower foraging range of 1.3km (France) would mean the northern pintail relies on the FLL a lot more than a pintail from Louisiana (~18km). Natural England request further explanation be provided by RED.	The 18km mean flight distance was selected as it automatically includes a greater area of potentially functionally linked land (FLL) than using a shorter distance (see **Report to Inform the Appropriate Assessment [APP-038]**). Should a shorter distance have been selected potential effects on pintail would all have been screened out as the Arun Valley Ramsar site is more than 1.3km from either the Arun or Adur Valley (I.e. any pintail observed would have been assumed to be unconnected to the Ramsar site population). Therefore, the assumption made is precautionary (see **Report to Inform the Appropriate Assessment [APP-038]**).
J17	7.2.13	Natural England note that a potential for Adverse Effect on Integrity (AEoI) to the conservation objectives of the northern pintail of the Arun Valley Ramsar site (in relation to land take/land cover change effects) has been ruled out. However, our previous point regarding foraging range should be addressed by RED before making a conclusion.		Our previous comment above should be addressed in greater detail, to understand any likely impacts in relation to land take/land cover change effects, to the conservation objectives of the northern pintail of the Arun Valley Ramsar site.	There would be no potential for an Adverse Effect on Integrity (AEoI) on pintail if those associated with the Ramsar site only regularly move from the designated sites to functionally linked land (FLL) within 1.3km from the boundary. The Arun Valley Ramsar site is 4.8km from the proposed DCO Order Limits at the closest point (over 9km to the nearest potentially FLL). It is also noted that the flight distances to other species of interest (e.g. wigeon, teal, shoveler) are under 4.8km thereby again demonstrating a precautionary approach to the

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					assessment (see **Report to Inform the Appropriate Assessment [APP-038]**).
J18	7.2.21	Natural England note that the area of land left behind following construction may take several years to re-establish recover / fully. This linear habitat fragmentation causes severance of the landscape which could impact upon the Northern Pintail. Works may not be taking place during the vast majority of time Pintail is present, but habitat degradation may last for years after the construction and impact the species for negatively for years. In general, Natural England note that temporary loss of functionally linked land of the Arun Valley SPA and Ramsar site could occur for a number of years post construction. We note that reinstatement of the cable route corridor is proposed to take place within two years of the initial habitat loss. Natural England advises there is not sufficient certainty that full reinstatement to previous condition, and agricultural use, is likely to occur within the proposed time frame and is likely to be greatly longer if the construction phase is to last up to five years. This is made more likely if temporary fencing is to remain in place for the entirety of the five-year construction period. Furthermore, temporary fencing of the cable route within the FLL could be maintained beyond the five-year construction period (as seen with original Rampion cable route development), which could add further time delay until the FLL is fully reinstated to its previous agricultural use.		Natural England advise that further assessment should be made into potential impacts of temporary loss of FLL. Precautionary principle should be applied to allow for a longer period of habitat loss and reinstatement back to previous condition. With regard to temporary fencing, Natural England advise that detail should be provided to demonstrate when or if temporary fencing will be removed following the construction period.	As described above in the response to **reference J11** the reinstatement under commitment C-103 in the **Commitments Register [APP-254]** is to begin within 2 years of loss and is not assuming target condition is reached within that period. However, it is noted that reinstatement of modified grassland and arable land is expected to occur rapidly given the type of habitats in question. The habitat reinstatement is to be done sequentially which means that it is divorced from the overall length of the construction phase in any given location. Habitat reinstatement is secured in the **Outline Landscape and Ecology Management Plan [APP-232]**, pursuant to Requirement 12 of the **Draft Development Consent Order [PEPD-009]**. Temporary fencing will be maintained for the duration of the construction works - up to 3.5 – 4 years years at the landfall, temporary construction compounds, joint bays, grid connection point and the onshore substation. Along the onshore cable route, the temporary fencing will be potentially needed for up to 2 years for the safe operation of the haul roads. As described in **reference J12**, the areas of suitable habitat for the designated species are considerable distance from the Arun Valley Special Protection Area / Ramsar site (in excess of 9km) suggesting that fragmentation will not be an issue as birds are unlikely to be moving across the works when travelling to or from the designated site.
J19	7.2.24	*'With respect to wigeon and teal there will be periods when construction activity will be close to the waterbodies near the Church of Mary Magdalene, Lyminster (around 285m away) and within the coastal and floodplain grazing marsh within the Adur Valley. For these birds to move between the Arun*		Natural England raises the same query as above in terms of long-term impact on the land and reinstatement potentially	Please see response to **references J12** and **J18**. It is also noted that there are no construction works proposed between the Church of Mary Magdalene, Lyminster and the

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		Valley Ramsar and these areas will require them to cross the working area or divert around it.'		taking over 2 years before it may attract bird species again.	Arun Valley Special Protection Area / Ramsar site.
J20	7.2.25	Natural England note that the *'…works will mainly be undertaken outside the period when wigeon and teal are present…'.*		Natural England question why works cannot take place entirely outside the periods where the birds are present, instead of 'mainly'.	Commitment C-117 in the **Commitments Register [APP-254]** (provided at Deadline 1 submission) has been designed to avoid the main period in which wintering wildfowl are present. It is acknowledged that some birds will be present in September and March, however it is also necessary to enable works to take place in the area when the area is not subject to flooding and the ground is not waterlogged. Typically, this will be in mid to late summer. However, flexibility is required due to unpredictability of the weather. The October to February period includes the times when the birds are likely to be most energetically stressed (as it is coldest) and accords with the times in the survey data when aggregations of birds were identified. As numbers were not overly large (see **Appendix 22.14: Onshore Winter Bird Survey, Volume 4** of the ES [**APP-192**]) and the Arun Valley Special Protection Area / Ramsar site is 4.8km (more than 9km from nearest potentially functionally linked land (FLL)) away from the proposed DCO Order Limits the commitment is seen as more than adequate to avoid any adverse effects. Commitment C-117 is secured in the **Outline Code of Construction Practice [PEPD-033]** which is secured through the **Draft Development Consent Order [PEPD-009]**.
J21	7.2.21 7.2.24	In some circumstances, it appears the land disturbed by open trenching along the cable corridor will not be reinstated for 2 years post cable installation, meaning there is the potential for the existing habitat to not return to the standard it was before, for many years. This linear habitat fragmentation causes severance of the landscape which could impact upon species, for example displacing important bird species using the area as functionally linked land (FLL).		Natural England advise that greater detail should be provided on the efficacy of embedded mitigation measure C-103 to prevent long sections of lost habitat awaiting reinstatement too long and causing severance through fragmentation.	Please see responses to **references J12** and **J18**.

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				Can reinstatement begin as soon as practically possible, i.e. within a year, for the majority of the corridor of habitat lost following construction to prevent there being large gaps of habitat degradation?	
J22	7.2.40 & 7.2.65-66	Whilst Natural England has confidence that The Sussex North Offsetting Water Scheme (SNOWS) will be in place by the time of commissioning, we question whether a suitably worded condition can be relied upon with certainty, at the appropriate assessment stage. This is due to the fact that the mitigation scheme is not currently operational. As set out in Natural England's Advice Note regarding Water Neutrality within the Sussex North Water Supply Zone, the existing water supply in the Sussex North water supply zone cannot be ruled out as contributing to the declines in wildlife within internationally protected sites in the Arun Valley SPA, SAC and Ramsar site. Achieving water neutrality is recognised as a suitable method to rule out potential adverse effects on the integrity of these sites arising from development. The Sussex North Water Supply Zone includes supplies from a groundwater abstraction which cannot with certainty conclude no adverse effect on the integrity of; • Arun Valley Special Area Conservation (SAC); • Arun Valley Special Protection Area (SPA); and • Arun Valley Ramsar Site. As it cannot be concluded that the existing abstraction, which supplies mains water use within the Sussex North Water Supply Zone, is not having an impact on the Arun Valley site we advise that developments within this zone must not add to this impact. This is required by recent caselaw, Case C-323/17 People over wind and Sweetman, ruling of CJEU (often referred to as Sweetman II) and Coöperatie Mobilisation for the Environment and Vereniging Leefmilieu Case C-293/17 (often referred to as the Dutch Nitrogen cases). Between them, these cases require Plans and Projects affecting sites where an existing adverse effect is known (i.e., the site is failing its conservation objectives), to demonstrate certainty that they will not contribute further to the		Natural England would advise that additional details be submitted, which considers how water neutrality could be demonstrated, without overly relying on a strategic mitigation scheme which is yet to become operational. Further consideration of how suitable water neutrality mitigation can be suitable secured, should be considered and provided by RED. To support in the assessment, Natural England would advise that an estimated water use should be calculated to inform the evidence base, for which mitigation measures should be proposed against. Without these details, it may not be possible to conclude with certainty, of no adverse effect on the integrity of the Arun Valley designated sites, from over abstraction of groundwater from within	Please see the response to **reference J10**. On the basis of that information, regardless of the availability of the strategic scheme, the Proposed Development can be delivered whilst retaining water neutrality.

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		existing adverse effect or go through to the latter stages of the Regulations (no alternatives IROPI etc). Given this development would increase water demand within Sussex North, it must therefore not add to the impact of the existing groundwater abstractions on the Arun Valley sites. Plans and projects within Sussex North can rule out this potential adverse impact either by demonstrating with certainty that their water demand can be met without any mains supply or by demonstrating that water neutrality for mains demand can be achieved. The simple definition of water neutrality is that "The use of water in the supply area before the development is the same or lower after the development is in place". It should also be noted that the Gatwick Sub regional Water Cycle Study concluded that water neutrality is required for Sussex North to enable sufficient water to be available to the region.		the Sussex North Water Supply Zone. Be advised that it is also not apparent whether the SNOWS strategy will have sufficient capacity to offset this proposal's water demands in addition to the demands of wider development in Sussex North. This is an additional reason why the estimated water use should be calculated.	
J23	General Comment on Water Neutrality	Natural England note that water use within the SNWSZ during the construction phase of the proposal, has not been screened to determine whether any increase in water use is likely to have a significant effect (LSE) on Arun Valley designated sites (SPA, SAC and Ramsar site).		Natural England advise that RED conduct a routine screening exercise, to determine whether increased water use during the construction phase of the proposal is likely to have a significant effect (LSE) on the Arun Valley designated sites.	In terms of construction water usage, the Applicant can confirm that water for construction within the Sussex North Water Supply Zone will not be taken from the mains, and it will instead be imported to main compounds (for their welfare systems, and wheel washing) and Trenchless Crossing (TC) compounds (for use of drilling fluids), for wheel washing, potentially dust suppression, and welfare facilities. On this basis construction was not considered and screened out of the **Report to Inform Appropriate Assessment (RIAA)** **[APP-038]**.
Document used: [APP-044] 6.2.3 Environmental Statement - Volume 2 Chapter 3 Alternatives					
J24	3.1.12	Natural England note the reference to 'some designated sites'. Does this relate to SSSIs and Local Wildlife Sites (LWS)?		Clarification of 'some designated sites' requested.	In **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** all statutory and non-statutory designated sites were considered during the optioneering and design phases including European sites, Sites of Special Scientific Interest, National Nature Reserves, Local Nature Reserves and Local Wildlife Sites. European sites were considered as hard constraints (see paragraph 3.1.11, **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**), with other designated sites and ancient woodland considered as softer constraints (see

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					paragraph 3.1.12, **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**).
J25	3.1.12	Have designated site and irreplaceable habitats such as Ancient Woodland have been selected as 'soft' constraints due to the reliance of embedded measures. Natural England are concerned that RED are overly reliant on specific embedded measures (i.e. HDD), to mitigate against permanent loss of irreplaceable habitats such as Ancient Woodland. Site specific feasibility studies for embedded measures such as HDD have not been undertaken to date.		Natural England advise that the commitment register should be updated, so that open trenching is not a back-up option through irreplaceable habitats if trenchless crossing operations were to fail.	Please refer to responses to **references J3**. It is also noted that irreplaceable habitats have been considered during the design process mainly via avoidance.
J26	3.4.38	Natural England note that a number of proposed alternatives and modifications considered within the PEIR SIR (RED,2022) were outside of the original proposed scoping boundary (RED, 2020)		Natural England are of the understanding that this has been discussed and agreed with The Planning Inspectorate.	Section 5.6 within **Chapter 5: Approach to the EIA, Volume 2** of the ES **[APP-046]** outlines the process undertaken by the Applicant with respect to Environmental Impact Assessment (EIA) Scoping. Paragraphs 5.6.4 within **Chapter 5: Approach to the EIA, Volume 2** of the ES **[APP-046]** describes that in response to Statutory Consultation feedback the Applicant developed a number of potential modifications and alternative cable routes and prior to consulting this was discussed with the Planning Inspectorate including the potential requirements for re-scoping. It was acknowledged that the requirement for a full EIA re-scoping would be dependent on the specific updates to the design of the Proposed Development and/or changes to the scope of the environmental assessments. Paragraph 5.6.8 within **Chapter 5: Approach to the EIA, Volume 2** of the ES **[APP-046]** states that '*although changes to the design of the Proposed Development have been considered since the initial scoping of the EIA, the extent of deviation from the Scoping Boundary is limited, and the features and receptors encountered are similar to those within the Scoping Boundary. RED have discussed the evolution of the Proposed Development throughout the pre-application stage during the EPP process with stakeholders. Therefore, it is considered that the*

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					Proposed Development remains materially the same as that on which scoping undertaken.'
J27	3.4.51	Natural England are concerned with the proposed permanent and irreplaceable loss of approximately 0.99 ha of plantation on ancient woodland soils (PAWS), associated with proposed LACR-02. Natural England does not endorse the loss of and damage to ancient woodlands, which are afforded significant protection in planning policy. This route option should only be considered where no other routes are found to be viable. Should this route be selected Natural England request to be consulted to ensure the best environmental outcomes and that the least impactful methodology is used.		Natural England advise that PAWS receives equal protection as ancient woodland under the NPPF. Ancient woodlands are irreplicable habitats and impacts should be avoided. We would therefore advise that the NPS – EN-1 and NPPF are followed when selecting the most appropriate cable route. We specifically signpost paragraphs 180. a) and c) of the NPPF (September 2023), which outlines the level of protection that is given to ancient woodland, and in addition highlights the mitigation hierarchy which should be followed to avoid and minimise significant harm to biodiversity. In addition, we would also signpost paragraph 5.5.54 of the draft NPS EN-1 (March 2023), which gives great weight to the protection of irreplaceable habitats such as ancient woodland.	The alternative route LACR-02 was discounted following the Second Statutory Consultation exercise (October to November 2022) and is not included within the proposed DCO Order Limits (see **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**. The Applicant can confirm that the design of the Proposed Development avoids all loss of ancient woodland and this is secured through commitment C-216 in the **Commitments Register [APP-254]** (updated at the Deadline 1 submission) which is secured in the **Outline Code of Construction Practice [PEPD-033]** which is secured through Requirement 22 of the **Draft Development Consent Order [PEPD-009]**.

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				Compensation measures should only be considered as a last resort, when impacts cannot be avoided or mitigated for, and when alternative, less damaging options are not available. We refer the Applicant to Natural England's standing advice for ancient woodland and the management of buffers. Natural England advise that PAWS receives equal protection as ancient woodland under the NPPF. Ancient woodlands are irreplicable habitats and impacts should be avoided. We would therefore advise that the NPS – EN-1 and NPPF are followed when selecting the most appropriate cable route. We specifically signpost paragraphs 180. a) and c) of the NPPF (September 2023), which outlines the level of protection that is given to ancient woodland, and in addition highlights the mitigation hierarchy which should be followed	

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				to avoid and minimise significant harm to biodiversity. In addition, we would also signpost paragraph 5.5.54 of the draft NPS EN-1 (March 2023), which gives great weight to the protection of irreplaceable habitats such as ancient woodland. Compensation measures should only be considered as a last resort, when impacts cannot be avoided or mitigated for, and when alternative, less damaging options are not available. We refer the Applicant to Natural England's standing advice for ancient woodland and the management of buffers. Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)	
J28	3.9.25	Trenchless crossings are an embedded mitigation measure, which if enacted successfully, will avoid impacts to ancient woodland. However, Natural England note that most mitigation measures carry their own risks. Without understanding these risks, it can be difficult to assess whether the mitigation will be effective, and the damage avoided.		Natural England advise that reassurances are needed to ensure this significant effect are truly avoided.	Please refer to responses to **references J3** and **J6**.

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				We note that there appears to be a risk of regressing to open trench techniques through irreplaceable habitats, should trenchless techniques not be possible.	
Document used: [APP-045] 6.2.4 Environmental Statement – Volume 2 Chapter 4 The Proposed Development					
J29	4.5.26	As previously mentioned, Natural England have concerns that the feasibility assessment of trenchless crossings has not been included within the DCO submission.		Without details of trenchless crossing feasibility, it is difficult to assess the scale and significance of the effect of the proposal on protected sites and important ecologically sensitive areas.	Please refer to **references J3** and **J6**.
Document used: **[APP-046] 6.2.5 Environmental Statement – Volume 2 Chapter 5 Approach to the Environmental Impact Assessment**					
J30	3.3.15	Natural England note that efficacy of a number of embedded mitigation measures have not been fully assessed with sufficient detail.		Natural England advise that greater detail should be provided on the efficacy of embedded mitigation measures C-5, C-43 (trenchless crossings) and C-115 (hedgerows). Natural England note that detailed feasibility assessment for trenchless crossings is proposed to be conducted post DCO acceptance.	Please refer to responses to **references J3** and **J6** with regards trenchless crossings. For hedgerows, the realistic worst-case scenario assessed within **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]** is based on hedgerow notches being cut to the ground, roots excavated and discarded, soil replaced and new planting. This is a typical approach to linear projects, other than that there would be multiple smaller notches as opposed to a single larger gap (to minimise losses). In these instances, it is expected that replanting would be successful on the basis that a robust Code of Construction Practice and Landscape and Ecological Management Plan is secured and delivered via Requirements 22 and 12 respectively of the **Draft Development Consent Order** [**PEPD-009**]. Commitment C-115 in the **Commitments Register** **[APP-254]** (updated at the Deadline 1 submission) has been refined to ensure that the description above is clear. It is noted that the smaller notches are equivalent to those often

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					created and then reinstated by local Distribution Network Operators (DNO) delivering cable connections on local distribution networks. Commitment C-115 in the **Commitments Register** **[APP-254]** (updated for the submission at Deadline 1) states that '*Hedgerows subject to temporary translocation will be lifted using a tree spade to maintain diversity and structure and result in more rapid reinstatement. Where chances of success are questionable, notches will be made by removal and reinstatement through planting. The ECoW will justify the approach being taken in line with the responsibilities of implementing the vegetation retention plan (see C-220).*'. This means where chances of success are low then temporary translocation will not be exercised and instead a typical approach of re-planting will be specified. This will necessarily be described within the reinstatement measures in the Landscape and Ecological Management Plan (secured via Requirements 12 and 13 of the **Draft Development Consent Order** [**PEPD-009**]). In locations where temporary translocation is appropriate (e.g. soils that are at least 60cm deep and support vegetation that does not appear to be drought stressed), translocated hedgerows would be subject to regular aftercare. Where it appears that translocated sections are failing new planting would be established along the line of the translocated section (on both sides). These plantings would develop into the hedge with the failed / partially failed translocated section providing a matrix to develop around. The Applicant recognises that the translocation of hedgerow will have more chance of failure than replanting using whips. The translocation has been provided as an option to maintain character and provide more rapid gapping up. However, should this option not be considered relevant then the relevant local authority and Natural England will have the opportunity to request translocation is not used at any given location through the approval of the stage specific Code of Construction Practice (CoCP)

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					and stage specific Landscape and Ecology Management Plan (LEMP) secured via Requirements 22, 12 and 13 of the **Draft Development Consent Order** [**PEPD-009**].
J31	3.3.18	*'…limited detail is provided as to the content of the management and mitigation plans that are listed, and many of the matters included are suffixed by statements such as "where possible" or "as far as practicable". It is therefore difficult for the Inspectorate to gain confidence as to the likely efficacy of such plans at this stage. The ES should therefore set out these plans (or the reliance placed on them) in sufficient detail so as to understand the significance of residual effects.'*		Natural England note that the wording of securing mechanism is ambiguous such as "where possible" and "as far as practicable" are still used and relied on in a number of embedded mitigation measures. Greater detail of embedded mitigation measures which utilise these ambiguous terms, should be provided, to greater fully understand the risks and likely success rates of these mitigation measures.	The statements referenced in this relevant representation are commonly used and accepted throughout the industry and in other Development Consent Order applications. An updated version of the **Commitments Register [APP-254]** is provided at Deadline 1 submission, including a revision of commitments where phrases have been used, such as 'where possible'. The Applicant has identified the appropriate embedded environmental measures to avoid, reduce or minimise effects based on best practice and industry experience. There is the need for some flexibility where a measure may not be applicable in a specific scenario during construction or require slight adjustment. The Applicant would need to confirm that no new or materially different environmental effects would arise in this instance. In such instances this would be confirmed in the stage specific documents secured the **Draft Development Consent Order (DCO) [PEPD-009]** such as the stage specific Code of Construction Practice (CoCP) secured through Requirement 22. Stages will be identified in accordance with the project programme and Requirement 10 of the **Draft Development Consent Order [PEPD-009]**.
Document used: [APP-061] 6.2.20 Environmental Statement - Volume 2 Chapter 20 Soils and agriculture					
J32	General Comment on Agricultural Land Classification (ALC)	It is unknown whether the survey was carried out by a suitably qualified (such as member of British Society of Soil Scientists (M I Soil Sci). We have noted this in previous PEIR comments.		Clarification requested	The Agricultural Land Classification (ALC) survey for Rampion 2 was completed by Land Research Associates. The lead author and approvers are both members of the British Society of Soil Science (BSSS), the approver is registered with the Institute of Professional Soil Scientists, qualified to MISoilSci and holds a PhD in agricultural soil management. The main

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					author holds a Master of Science degree in Soils and Sustainability and a Bachelor of Science (Hons) in Environmental Science. For further details, see **Chapter 20: Soils and agriculture, Volume 2** of the Environmental Statement **[APP-061]** and **Appendix 1.1: Competent Experts, Volume 4** of the ES **[APP-120]**.
J33	General Comment on ALC	Site information on micro relief, gradient and flood risk is absent.		Further information requested.	Paragraph 3.5 in **Appendix 20.1: Detailed Agricultural Land Classification Report, Volume 4** of the Environmental Statement (ES) **[APP-175]** lists the limiting factors and states that other factors were assessed but do not affect the grading. Microrelief was considered during the survey but was not identified as a limiting factor. Flood risk and gradient are listed as limiting factors for parts of the site. Limiting factors are also listed in the observation logs. Flooding is considered to be a limiting factor for some land near the coast with no flood protection, Environment Agency flood mapping was consulted alongside information gathered in the field (as stated in paragraph 3.10 in **Appendix 20.1: Detailed Agricultural Land Classification Report, Volume 4** of the ES **[APP-175]**. Gradient is also a limiting factor for some land within the proposed DCO Order Limits, gradient was measured in field with a clinometer.
J34	General Comment on ALC	Munsell soil colour notation is only provided for the soil pits. Munsell colours are necessary to determine whether the soil horizon is gleyed or not. It is not clear which colours have been used in the list of auger samples, therefore it is not clear whether the wetness class ascribed to each auger observation has been correctly assessed in accordance with the published ALC criteria for grading (MAFF, 1988). However, we note that gley indicators have been identified and noted in paragraphs 2.3.		Clarification requested	The colours at each auger point were checked against Munsell Colours for gleying as set out in the Survey Log Key (page 24 of **Appendix 20.1: Detailed Agricultural Land Classification Report, Volume 4** of the ES **[APP-175]**) with 'xxx' recorded where a gleyed horizon is identified. Mottles can be distorted in an auger and horizons are confirmed by soil pits where profiles are fully described. For the avoidance of doubt, the Applicant proposes that the **Outline Soils Management Plan** **[APP-226]** is updated to confirm that in future agricultural land classification (ALC) surveys completed for Rampion 2. The update will form part of the **Outline Code of**

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					Construction Practice [PEPD-033], secured through Requirement 22 of the **Draft Development Consent Order [PEPD-009]**. The Munsell colour notation will be used for all observation points. The proposed addition (as new paragraph 3.1.7) is noted as an errata, see **1.1 Cover Letter** which has been submitted at Deadline 1.
J35	20.1.3	Natural England is aware of available site-specific data that has not been included as part of the published information. The applicant should use all known published data when assessing the proposals impacts within the DCO boundary. A report and accompanying map (ref 4202\056\98) can be found here.		Natural England advise that all known published data should be used when assess the proposals impacts within the DCO boundary.	The Applicant has reviewed all available post-1988 agricultural land classification (ALC) reports and accompanying maps within the proposed DCO Order Limits (ref 4202\056\98 - dated 1998, ref 4205\244\93 - dated 1993, and ref 4205\247\93 - dated 1993). In all instances, where the areas included in these reports overlap with the proposed DCO Order Limits for Rampion 2, the land has been subject to partial agricultural land classification (ALC) survey for Rampion 2 (**Appendix 20.1: Detailed Agricultural Land Classification Report, Volume 4** of the Environmental Statement (ES **[APP-175]**). However, for completeness the post-1988 ALC information has been included in updated calculations of the areas of ALC grades across the proposed DCO Order Limits. This is noted as an errata, see **1.1 Cover Letter** which has been submitted at Deadline 1. The inclusion of the post-1988 survey data results in a slight increase in the total area of Grade 2 (to 128.5 hectares (ha) / 23% of the proposed DCO Order Limits, previously 126.1ha / 22%), a slight decrease in Subgrade 3a (200.0ha / 35%, previously 203.7ha / 36%), and a slight increase in Subgrade 3b (154.2ha / 27%, previously 153.5ha / 27%). The Applicant concludes that the published data does not increase the estimated total area of best and most versatile land in the assessment or change the assessment outcome. Given the period since the post-1988 survey data was obtained, it is the Applicant's intention that agricultural land which may be affected by the Proposed Development and which has not been included in the recent ALC survey (**Appendix**

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					20.1: Detailed Agricultural Land Classification Report, Volume 4 of the ES **[APP-175]**) will be surveyed to confirm its current ALC status during pre-construction, to inform the stage-specific Soils Management Plans (SMPs) in accordance with the **Outline Soils Management Plan [APP-226]**.
J36	20.2.2	Natural England notes there has been no lab analysis for particle size distribution analysis by the pipette method to confirm soil textures.		Natural England question why this lab analysis has not been conducted.	The Ministry of Agriculture, Fisheries and Food (MAFF) guidance (MAFF, 1988) states that the soil texture class may be assessed in the field by hand texturing or measured in a laboratory by particle-size analysis. For the Rampion 2 agricultural land classification (ALC) survey (**Appendix 20.1: Detailed Agricultural Land Classification Report, Volume 4** of the ES **[APP-175]**), hand texturing was completed by experienced surveyors.
J37	20.3.4	As mentioned above notation on micro relief, gradient and flood risk is absent however in this paragraph it is recognised that these are limiting factors in ALC grade.		Natural England request clarification.	See response to **reference J33**.
Document used: **[APP-062] 6.2.21 Environmental Statement - Volume 2 Chapter 21 Noise and vibration**					
J38	21.9.12	Natural England note that there are no temporary construction compounds within the SDNP, however there is one proposed temporary construction compound at Washington, which is adjacent to the SDNP boundary. We further note that tranquillity of the SDNP adjacent to the proposed construction compound has been classed as being relatively low, due the existing noise levels from A283.		Natural England question whether the tranquillity of the area already being low is a valid reason to add more noise impact to the SDNP. Natural England request further clarification and quantification of the terms '*substantially lower' and 'most of the works'*.	The National Planning Policy Framework states that policies and decisions should "*identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value*". Under planning policy guidance, for an area to justify being protected for its tranquillity "*it is likely to be relatively undisturbed by noise from human sources that undermine the intrinsic character of the area. It may, for example, provide a sense of peace and quiet or a positive soundscape where natural sounds such as birdsong or flowing water are more prominent than background noise, e.g. from transport".* Although the Washington compound is proposed to be adjacent to the SDNP, the compound is also adjacent to an A283; so, the

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					area of the National Park near to the proposed compound is not compatible with the NPPF definition of tranquil. Therefore, the sensitivity of this part of the SDNP to noise is low. The terms for clarification relate to the difference between the worst-case noise levels from the site and the idea that most of the time, the compound noise would be lower than those worst-case levels. The levels of 70dB at the SDNP were predicted for the highest concentration of activity to establish the compound. This is the worst-case. The worst case construction noise, when the compound is operational is predicted to be 65dB at the SDNP. Again, this is when the highest level of overlapping noisy activity is present at the compound. Substantially lower noise levels at the SDNP would mean more than 5dB lower than the stated worst case (i.e. such that BS 5228 threshold values of significance are not exceeded). The phrase "most of the works" identifies that the worst case noise levels at the SDNP, as discussed above, will occur for a short duration that the compound will be operational. At this stage, the construction details are not available to quantify this time, but the purpose of the phrase is to establish the general idea of lower noise levels than those for an assessment envelope resulting from works which are varied and intermittent. Please also see **Appendix 5 - Further information for Action Point 27 - South Downs National Park** (**Document Reference: 8.25.5**).
J39	21.9.21	Natural England note that trenchless crossing locations will result in noise levels of between 55dB and 75dB within the SDNP, which will likely impact the high tranquillity of the area.		Natural England note that the elevated noise levels will result in harm to special quality 3 of the SDNP, 'tranquil and unspoilt places'.	Whilst the assessment at residences focuses on specific locations, trenchless crossings will be within the SDNP and therefore the boundary of trenchless crossing is also effectively the receptor location for the SDNP. Due to this proximity, noise levels have been predicted at up to 75 dB without mitigation at the SDNP temporarily. Due to the temporary nature of this

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				Natural England request further clarification on how embedded mitigation measures (i.e. C-26) can reduce the noise levels within the SDNP. Have noise levels of 75dB been calculated, without consideration of embedded mitigation measures?	impact, it was concluded to be of minor effect and not significant. Embedded mitigation including screening of drilling equipment and compounds (Commitment C-26 (**Commitments Register [APP-254]** which is secured through stage specific Code of Construction Practices pursuant to Requirement 22 of the **Draft Development Consent Order [PEPD-009]**), the extent of potential harm will be localised and temporary. Where public rights of way (PRoWs) lie within the vicinity of such works, the mitigation will need to ensure that passers by are not exposed to dangerous levels of noise (i.e. Contractors will need to maintain their obligations under the *Health and Safety at Work etc. Act 1974* in addition to compliance with the **Outline Code of Construction Practice [PEPD-033]**). It should be noted that the noise sources used to predict construction noise at the sites are considered by the Applicant to represent a worst case of all activities being undertaken simultaneously. And therefore, the predictions also represent a worst case.
J40	21.9.48 to 52 & 21.9.60	Natural England note that the worst-case noise levels for works close to sensitive receptors, will be for a maximum of two days. Using residential receptor, this magnitude of change has been classed as low.		Construction throughout the SDNP will last considerably longer than two days. When assessing the noise level over a much longer time period. Natural England question whether by concluding minor adverse significance to individual receptors within the SDNP, is RED under assessing the cumulative impact to the whole of the SDNP from the construction works.	The two days assessment in **Chapter 21: Noise and vibration, Volume 2** of the Environmental Statement **[APP-062]** is based upon the line of onshore cable route for trenching passing by residential receptors. However, British Standard 5228 states that, in relation to public open spaces, "*the extent of the area impacted relative to the total available area also needs to be taken into account in determining whether the impact causes a significant effect*". As the area affected by noise from the discrete location of the trenching works as they progress along the cable route is a small the minor adverse significance, in this context, is considered by the Applicant to be the correct designation. With respect to cumulative impact, the short duration that the works are in any single area are unlikely to give rise to a cumulative noise impact upon

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					the same receptors, even if there are more than one activity area in the SDNP as a whole. For context the activity noise of the trenching would not be dissimilar in magnitude and spectrum to agricultural machinery, which is a regular feature of the National Park.
J41	21.9.66	*"The noise levels predicted at human receptors are above the SOAEL identified in Table 21-26. However, these levels are for a very temporary period. The toxicological effects of noise as stated in WHO guidance, upon which the SOAEL is based, are relevant to a longer duration and therefore are not considered relevant*."		Natural England request further information on this statement. What longer duration is being referred to? Weeks and months as opposed to days?	The significant observed adverse effect level (SOAEL) identified in **Chapter 21: Noise and vibration, Volume 2** of the Environmental Statement **[APP-062]** is based on criteria from Annex E of BS 5228. There are different temporal criteria that apply depending on the magnitude of the sound but as a guide the exposure would be at least 10 days, and more likely at least a month. Where receptors can move away from the works (i.e. transient receptors) there is a higher tolerance to noise than when compared to static receptors (for instance residential dwellings). For reference, the WHO guidance that is referred to here is averaged over a year or more.
Document used: [APP-063] 6.2.22 Environmental Statement - Volume 2 Chapter 22 Terrestrial ecology and nature conservation					
J42	22.6.14	Natural England question whether no LSEs on hydrological regimes across designated sites can be concluded, as mitigation will need to be demonstrate Water Neutrality for the proposed development.		Natural England advise that clarification should be provided, to determine whether the requirement to demonstrate water neutrality for the Arun Valley designated sites, relates to changes in hydrological regimes of the Arun Valley designated sites.	Water neutrality will be achieved by the Proposed Development during the operation and maintenance phase based on securing of mitigation (see **reference J23**). Furthermore, during the construction phase all water used within the Sussex North Water Supply Zone will be delivered in tankers and therefore, the hydrological regime of designated sites can be confirmed to have no likely significant effects.
J43	Table 22-6	*'Chapter 4: The Proposed Development, Volume 2 of the ES (Document Reference: 6.2.4) notes that the DCO does not consent open trenching methods in areas where HDD is being proposed (should HDD fail additional consent would be required to deliver an alternative solution).'* – Natural England question whether the Environmental Statement has an over reliance on trenchless crossing as an embedded measure.		Natural England note that additional consent would be required if an alternative solution is necessary should embedded mitigation measures such as trenchless crossings fail.	See response in **references J3 and J4**.

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				Natural England has raised significant risks associated with the feasibility of trenchless crossings (such as HDD) since the publication of the PEIR in 2021. There is a lack of information regarding the suitability of ground conditions. It is difficult to understand whether this embedded mitigation can be suitably relied upon. It has also been difficult to understand the specific risk levels normally associated with HDD operations (i.e. likelihood of success, likelihood of frac outs, sink holes or impacts to hydrology). Without details of trenchless crossing feasibility, it is difficult to assess the scale and significance of the effect of the proposal on protected sites and important ecologically sensitive areas (as well as visually sensitive locations. Natural England request clarification as to whether trenchless crossings investigations will be concluded prior to the commencement of the construction phase? If new or materially different environmental effects arise (compared to those assessed in the	

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				Environmental Statement), we advise that these should be identified prior to the commencement of the construction phase, to allow for greater scope to avoid any potential adverse environmental effects. Natural England advise that contingency measures should be assessed within the Environmental Statement, in the event that trenchless crossings are not feasible at ecologically and visually sensitive sites.	
J44	Table 22-12	Natural England note that 30 hedgerows were not accessible for survey. Will these 30 hedgerows be assumed to be "important" as a precaution.		Clarification requested on importance of un-assessed hedgerows.	The hedgerows not surveyed have been classified as 'hedgerows' or 'potentially important hedgerows' based on available information. This information includes the opportunity to have viewed these hedgerows in relatively close proximity where diversity of the woody species in the hedgerow could be judged, or its status (e.g. intact or defunct, absence of shrubby layer etc.) could be determined. The potentially important hedgerows are shown on the **Tree Preservation Order and Hedgerow Plan [PEPD-007]**.
J45	Table 22-8	Natural England acknowledge the separation of Importance (legislation and policy) against scale of effects.		This clarification since the original PEIR is welcome, as we had previous concerns that HGV and LGVs would utilise this access route during the construction phase, which could have led to air quality impacts (dust suppression) to the adjacent SSSI.	Noted, the Applicant has no further comments on this matter at this time.

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J46	Table 22-8	Natural England acknowledge the separation of Importance (legislation and policy) against scale of effects.		No further comments.	Noted, the Applicant has no further comments on this matter at this time.
J47	22.7.8	'…*the delivery of BNG is not used when conclusions are drawn about the significance of effects identified in this assessment'* – Natural England acknowledged this statement.		Natural England request clarification as to whether BNG is to be used as compensation for loss of priority habitats.	The Proposed Development provides mitigation and some compensation. This is in the form of reinstatement of habitats temporarily lost and the creation of habitats around the onshore substation and grid connection point. However, there will still be a shortfall to meet 'no net loss' (i.e. the compensation element) and provide biodiversity net gain (BNG) (i.e. delivery of units above no net loss). This will include habitats including hedgerows and woodland. However, the assessment of significant effects in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement **[APP-063]** is not predicated on the delivery of BNG. Rather, as the losses will be relatively small (especially at any given location) and will be reinstated, the overall effect is considered to be not significant. The statutory biodiversity metric will provide for both the shortfall to no net loss and to deliver a biodiversity net gain of at least 10% as described in **Appendix: 22.15 Biodiversity Net Gain Information, Volume 4 o**f the ES [**APP-193**].
J48	22.9.29	'Given that barbastelle will cross disturbed areas (such as the A27) and make nightly long-distance movements it is likely that individual bats could make minor deviations in flight routes to avoid the disturbance source without resulting in detectable increases in energy expenditure.' – Natural England question why level of disturbance and energy expenditure is being compared against existing infrastructure. Is this an attempt to reduce the significance of impacts to Barbestelle bats from The Mens SAC?		Additional clarification should be provided to show how impacts from road crossings (A27) are directly comparable with HDD compounds (which are to be lit all night long, with increased levels of noise).	The Mens Special Area of Conservation (SAC) 12km area (defined by the Sussex SAC Bat Protocol) falls outside any area where the Proposed Development would result in losses of typical barbastelle bat (*Barbastella barbastellus*) habitat (such as hedgerows, scrub and woodland edge). Lighting at any trenchless crossing (such as horizontal directional drill (HDD)) compound will be temporary and highly localised (I.e. within a 50 x 70m area). Therefore, it would seem reasonable to conclude that barbastelle could navigate around one of these areas, especially given that the lighting would be located in open habitat areas not favoured by this species. During the construction phase, the lighting design will also be controlled (see commitment C-105 in the **Commitments Register** **[APP-254]** provided at Deadline 1 submission) to ensure it is wildlife

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					friendly. Commitment C-105 is secured in the **Outline Code of Construction Practice [PEPD-033]** which is secured through the **Draft Development Consent Order [PEPD-009]**. Noting that barbastelle cross roads or navigate other areas disturbed by human activity was simply used to demonstrate that they have some flexibility to operate in environments where artificial light is used. It should be noted that the vast majority of the onshore works will require no temporary or permanent lighting.
J49	22.9.41	Natural England note that trenchless techniques such as HDD is a form of mitigation that carries its own risks. Proposed trenchless crossing at Climping beach could be located beneath the western end of Climping Beach SSSI, though we note that Climping Beach SSSI could be completely avoided.		Natural England advise that the mitigation hierarchy should be followed at Climping Beach SSSI. Impacts should be 'avoided, mitigated or as a last resort compensated'. Natural England would advise that HDD beneath Climping Beach SSSI should be avoided, in the first instance, before wholly relying on the embedded mitigation measure of trenchless techniques.	The landfall optionality has been maintained to account for future coastal realignment and the selection of the route and landfall point for the export cable offshore. The majority of the area (at the beach) interacts with the Littlehampton Golf Course and Atherington Beach Local Wildlife Site (LWS), as opposed to the Climping Beach Site of Special Scientific Interest (SSSI). The routeing of cables is to be determined during the detailed design phase with the mitigation hierarchy applied in light of engineering detail.
J50	22.9.43	Natural England note that monitoring during HDD nighttime operations have not been detailed. It is also not clear if Climping Beach SSSI will receive increased levels of light during the nighttime operations.		Natural England request that details are submitted, to outline what type of monitoring will occur during HDD operations at nighttime. Further impacts should be assessed if likely impacts to Climping Beach SSSI are expected from this type of monitoring.	Climping Beach Site of Special Scientific Interest (SSSI) is more than 175m from the location of the closest landfall option and lighting design will be wildlife friendly (commitment C-105 in the **Commitments Register [APP-254]** provided at Deadline 1 submission). Therefore, no light spill is expected. Likewise, the vessel that will be in inshore waters as part of the landfall works will also be too far away from the SSSI to create light spill upon it. In terms of monitoring the horizontal directional drill (HDD) during the overnight period the same measures apply as described in the **Outline Construction Method Statement [APP-255]**

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					and **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** and secured through Requirements 23 and 22 respectively of the **Draft Development Consent Order** **[PEPD-009]**. This includes monitoring pressures at the drill head to note any changes that would be associated with losses of drilling fluids.
J51	22.9.54	'*A 'no dig' specialist has appraised the trenchless crossing locations and assessed them as suitable, with risks of a fluid breakout being very low and manageable as described in the Outline CoCP (Document Reference: 7.2).*' – Natural England note that no detailed feasibility to outline the risks of trenchless crossings has been submitted to date. Natural England note that RED have stated that impacts to irreplaceable habitats (such as ancient woodland) will be re- assessed if an alternative option to trenchless crossings is required. Natural England would like to understand when the trenchless crossings will be undertaken (i.e. will majority of cable installed by trenched crossing will have already been installed?). If HDD is not feasible, Natural England are concerned that potential significant loss of irreplaceable habitat could occur.		Natural England have raised concerns (in above comments) as to the efficacy of trenchless crossings techniques. Natural England advise that contingency measures should be assessed within the Environmental Statement, in the event that trenchless crossings are not feasible at ecologically and visually sensitive sites.	Please see responses to **references J3 and J6**.
J52	22.9.73	Natural England note that 2.7ha of woodland is to be provided around the location of the onshore substation. It is however not clear if this compensation is being delivered separate, or as part of BNG delivery.		Natural England advise that RED need to clearly differentiate between habitat being delivered for compensation, and habitat being delivered for BNG. Natural England advise that one clear log should be created, to clearly list and audit the habitat compensation, BNG enhancement and BNG habitat creation, being proposed for the entirety of the onshore phase of the development.	The Applicant has followed the mitigation hierarchy when designing the Proposed Development. As distinct from mitigation, compensation is to be delivered in two ways, firstly within the proposed DCO Order Limits where necessary to enable the grant of protected species licences (for example for dormouse at the Oakendene substation location – see the **Outline Landscape and Ecological Management Plan (LEMP)** **[APP-232]**) which is secured through Requirement 12 of the **Draft Development Consent Order** **[PEPD-009]**. Compensation for habitat loss not delivered on site will also be provided through the Biodiversity Net Gain strategy (C-104) which is detailed in **Appendix 22.15: Biodiversity Net Gain Information, Volume 2** of the ES **[APP-193]**. This is in line with the UK Government's mandatory biodiversity net gain system (implemented through the Environment Act 2021) where the statutory biodiversity metric calculates both compensation need (i.e. the point

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					at which no net loss is reached) and net gain (i.e. at least 10% above the no net loss point). Biodiversity net gain is secured through Requirement 14 of the **Draft Development Consent Order [PEPD-009]**. Below is a description of how the mitigation hierarchy has been applied at each stage. Avoidance measures have evolved through the design process and are demonstrated by both the shape and location of the proposed DCO Order Limits (for example where possible it has been drawn to exclude various ecological features including areas of ancient woodland and areas of Priority Habitat) and through the Vegetation Retention Plan that is appended to the **Outline Code of Construction Practice [PEPD-033]** which is secured through Requirement 22 of the **Draft Development Consent Order [PEPD-009]**. Further measures of avoidance include those that describe construction scheduling such as commitments C-21 (avoidance of active nests of reeding birds during vegetation clearance), C-112 and C-114 (avoidance of physical effects within Site of Special Scientific Interest (SSSI) and Local Wildlife Site (LWS)), C-117 (avoidance of disturbing activity during the coldest winter months), C-174 (avoidance of veteran trees), C-203 (avoidance of disturbance / damage to active nests of ground nesting birds) and C-215 (avoidance of disturbing activities close to occupied barn owl boxes). These commitments are secured in the **Outline Code of Construction Practice [PEPD-033]** and **Outline Construction Method Statement [APP-255]** which are secured through Requirements 22 and 23 respectively of the **Draft Development Consent Order [PEPD-009]**. Embedded environmental measures in the **Commitments Register [APP-254]** (updated at the Deadline 1 submission) include the following commitments secured in the **Outline Code of Construction Practice [PEPD-033]** and **Outline Construction Method Statement**

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					[APP-255] which are secured through Requirements 22 and 23 respectively of the **Draft Development Consent Order [PEPD-009]**: • the specification of trenchless techniques to cross main rivers, SSSI, LWS and ancient woodland (commitments C-112, C-114 and C-216); • the implementation of wildlife sensitive lighting design (commitment C-105); • implementation of speed restrictions to avoid collisions with wildlife (commitment C-106); • implementation of biosecurity measures (commitment C-107); • measures to minimise disruption to watercourses and maintain fish passage (commitments C-64, C-205 and C-229); • reinstatement of temporary habitat loss within two years (commitment C-103); • measures to reduce hedgerow loss (commitment C-115 and C-224); • imposition of stand-off distances to watercourses (commitment C-135); • reduction in woodland loss (commitment C-204); and • pre-construction survey programme to implement appropriate mitigation based on latest distribution (commitments C-203, C-209, C-210, C-211, C-214 and C-232). The **Outline Landscape and Ecological Management Plan (LEMP) [APP-232]** which is secured through Requirement 12 of the **Draft Development Consent Order [PEPD-009]** also describes mitigation and compensation measures at the onshore substation site and grid connection point in terms of providing advanced planting to maintain connectivity and buffer

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					disturbance and compensation in the form of habitat creation. The measures summarised above will be delivered alongside a Biodiversity Net Gain strategy (commitment C-104) which is detailed in **Appendix 22.15: Biodiversity Net Gain Information, Volume 2** of the ES **[APP-193]** and is secured through Requirement 14 of the **Draft Development Consent Order** **[PEPD-009]**. This allows for enhancement and biodiversity net gain (BNG) to be delivered on land within affected districts. The habitats delivered at the onshore substation and reinstatement at areas of temporary habitat loss will be included within the BNG calculations as per Department for Environment, Food and Rural Affairs (Defra) guidance '*What you can count towards a development's biodiversity net gain*' (Defra, 2023). Regardless, there will remain a shortfall to reach a position of 'no net loss'. Therefore, this shortfall (alongside BNG) is to be delivered through the process described in **Appendix 22.15: Biodiversity Net Gain Information, Volume 2** of the ES **[APP-193]**.
J53	Table 22-25	As a precaution, potentially important hedgerows should be crossed via trenchless techniques. H245, H372, H464, H474, appears to be being crossed via trenched notched technique (14m temporary loss), as opposed to trenchless techniques (6m temporary loss), which has been stated for potentially important hedgerows H527 and H528.		Natural England request clarification be provided on how specified potentially important hedgerows are being crossed.	It is not possible in all instances to cross important and potentially important hedgerows with a 6m notch only. This is due to engineering considerations including where the cable changes direction, at road / track crossings and proximity to an trenchless crossing location (and therefore the need to string out ducts). The Vegetation Retention Plan within the **Outline Code of Construction Practice** **[PEPD-033]** is secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]** and it shows what will occur at each hedgerow.
J54	Table 22-25	Natural England also question why important hedgerows have the same length of temporary loss as not important hedgerow (noted for H481). Have embedded measures such as trenchless crossings not been assumed when calculating the estimated length of loss (i.e. depicting the realistic worst-case scenario)		Clarification from RED requested	See response to **reference J53**.

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J55	22.9.101	Natural England note that the length of tree line to be temporarily lost is stated as 378m – Natural England question if this temporary loss is due to an access route, or due to the proposed cable route. If temporary loss is due to the cable route, Natural England were of the understanding that trees could not be planted over the cable.		Clarification from RED requested, as to the nature of the tree line reinstatement.	All tree line losses are associated with cable installation or access to the onshore cable route. **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement **[APP-063]** states in footnote 46 in Section 22.9 that '*Reinstatement of tree lines may require different species to be planted above the cable ducts to ensure root damage can be prevented.' This is in acknowledgement that large trees such as oak and beech cannot be replanted over cables, however some smaller trees that may be typically thought of as hedgerow species (such as hawthorn, blackthorn, hazel etc.) could be grown and managed as individual trees.'* It is noted that in the assessment of BNG (**Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]**) all habitat temporarily lost to development is considered to be lost and then replaced through creation. This ensures that the temporal risk associated with the length of time it requires for habitats to re-establish is taken into account.
J56	22.9.102	Natural England note that reference is made to 80% success rate for embedded measure (hedgerow translocation) used in the Lake District National Park. We question whether an 80% success rate is expected for this development.		Natural England advise that further justification and evidence be provided to support this 80% success rate for hedgerow translocations for this development. Local context/factors should be considered to assess the likely success rate for this development, this should be used to inform the Landscape and Ecology Management Plan (LEMP). Natural England are also concerned that	The realistic worst-case scenario used within **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement (ES) **[APP-063]** as the basis for assessment is that all hedgerows that are crossed are cut and replanted (mainly within notches). The temporary translocation of hedgerows has been included in commitment C-115 (**Commitments Register [APP-254]** which is secured in the **Outline Code of Construction Practice [PEPD-033]**, Requirement 22 of the **Draft Development Consent Order [PEPD-009]**) (updated for the Deadline 1 submission) as it could provide a good option to retain diversity, aid the speed of reinstatement and provide structure. However, it is noted in commitment C-115 (**Commitments Register [APP-254]**) that this will only be delivered where appropriate conditions exist and chances of success are good. This would be detailed in the Code of

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				temporary visual impacts to the SDNP could occur if the translocation success rate has been overstated. Collectively, temporary hedgerow loss within the SDNP could lead to significant visual impacts, until the hedgerows are fully reinstated. Natural England would therefore advise that these impacts could be appropriately avoided (or greatly reduced) to the SDNP, if trenchless techniques (such as pipe jacking) were utilised for all hedgerow crossings within the SDNP.	Construction Practice and the Landscape and Ecology Management Plan secured through Requirements 22 and 12 of the **Draft Development Consent Order [PEPD-009]**. It is a technique that has been highlighted as a way in which effects could be mitigated, however whether it is used or not depends on the Code of Construction Practice and the Landscape and Ecology Management Plan being approved by the relevant local planning authority and Natural England. The Applicant is of the opinion that this approach may be beneficial, on the basis of the implementation of appropriate monitoring and pre-agreed rapid responses to failure (i.e. ensuring additional planting is provided promptly). It should be noted that this approach (temporary translocation and replacement of hedgerows) was considered acceptable in the consented Brechfa Forest Connection project (see paragraph 5.2.99 and Requirement 28 of the Examining Authority's Report of Findings and Conclusions to the Secretary of State for Energy and Climate Change NI Report Template (planninginspectorate.gov.uk).
J57	22.9.104	Natural England note that there is no direct compensation proposed for the permanent loss of approximately 622m of hedgerow/tree line.		Majority of loss is located at the proposed substation location. Natural England would therefore expect to see substantial BNG proposed in the local area, as outlined within commitment C-104.	Loss of hedgerows with trees from the Oakendene site are not re-provided within the indicative landscape plan shown in the **Outline Landscape and Ecological Management Plan (LEMP) [APP-232]** which is secured through Requirement 12 of the **Draft Development Consent Order [PEPD-009]** and comprising part of the **Design and Access Statement [AS-003]**. This is because other habitats in this location are considered more appropriate and beneficial in terms of screening and provision for protected species such as dormouse. The use of the Statutory Biodiversity Net Gain system as laid out by the Department for Environment, Food and Rural Affairs (Defra) (November, 2023) will be used to deliver the short fall of biodiversity units to reach 'no net loss' (i.e. compensation) and biodiversity net gain (BNG). **Appendix 22.15: Biodiversity Net Gain**

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					Information, Volume 4 of the ES **[APP-193]** provides a hierarchy for choice of appropriate opportunities with priority for delivering local BNG on landholdings that have been affected by the Proposed Development.
Document used: [APP-064] 6.2.23 Environmental Statement - Volume 2 Chapter 23 Transport					
J58	23.4.18	Natural England query why traffic generation has only been calculated for a 5-day working week when it says the working hours will be Mon-Fri 07:00-19:00 and Sat 08:00-13:00.		Further consideration advised.	Paragraph 5.8.11 (first bullet) within the **Traffic Generation Technical Note [APP-197]** which has been updated at the Deadline 1 submission states that *'for robustness, weekday traffic numbers have been calculated on the basis of dividing the weekly traffic by five working days per week'*. This provides a worse case for assessment as dividing the weekday traffic to include Saturday working (e.g. dividing by 5.5) would result in lower construction traffic flows. An update to the core working hours in commitment C-22 has been included within the updated **Commitments Register [APP-254]** provided at Deadline 1 submission. It states: *'Core working hours for construction of the onshore components will be 08:00 to 18:00 Monday to Friday, and 08:00 to 13:00 on Saturdays. Apart from specific circumstances that are set out in the Outline COCP, where extended and continuous periods of construction are required.* *Prior to and following the core working hours Monday to Friday, a 'shoulder hour' for mobilisation and shut down will be applied (07:00 to 08:00 and 18:00 to 19:00). The activities permitted during the shoulder hours include staff arrivals and departures, briefings and toolbox talks, deliveries to site and unloading, and activities including site and safety inspections and plant maintenance. Such activities shall not include noise generating activity including use of heavy plant or activity resulting in impacts, ground breaking or earthworks.'* This will be updated in the next revision of the **Outline Code of Construction Practice [PEPD-**

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					033] which is anticipated to be at Examination Deadline 3.
J59	23.7.28	Natural England note that 100 vehicle movements per day during operation associated with the development is far below what we would normally screen in for traffic related air quality impacts.		No further comments.	Noted, the Applicant has no further comments on this matter at this time.
J60	23.7.39	Natural England note that 39 HGVs per day during construction is below the 200 AADT screening threshold for traffic related air quality impacts.		No further comments.	Noted, the Applicant has no further comments on this matter at this time.
Document used: [APP-067] 6.2.26 Environmental Statement - Volume 2 Chapter 26 Water environment					
J61	Table 26-10	Dew pond at Hill Barn, Warningcamp has been screened in as per Natural England's request.			Noted, the Applicant has no further comments on this matter at this time.
J62		It is not clear whether the cable route splits into two sections at TC-12 and TC-15.		Natural England seek clarification as to the purpose of having multiple options at TC-12 and TC-15. Would the worst-case scenario see all trenchless crossings compound alternatives used to install the proposed cables?	The flexibility (described further below) is required due to the engineering complexity of the crossings in these two locations and allows further ground investigation and detailed design to take place to optimise the crossing. The flexibility in the routes sought at TC-12 and TC-15 is illustrated in the Crossing Schedule in Appendix A of the **Outline Code of Construction Practice** **[PEPD-033]** in Table 1-1, 1-2 and 1-3 and Sheet 9 and Sheet 12 of the accompanying figure. Only one final route will be used as opposed to the suggested worst case described in this comment of all crossing locations being used. The location of the trenchless crossing and onshore cable route will be confirmed in the stage specific Onshore Construction Method Statement, provided in accordance with the **Outline construction method statement** **[APP-255]** which is secured through Requirement 23 of the **Draft Development Consent Order** **[PEPD-009]**. Each of these potential routes have been considered to be equal in the assessment of potential effects provided in Section 26.9 –

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					26.11 of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**.
Document used: **[APP-121] 6.4.3.1 Environmental Statement - Volume 4 Appendix 3.1 Supporting information**					
J63	Table 2-5	Natural England note that AA-33 to AA-35 were also considered within the 3rd statutory consultation exercise (RED, 2023a)		Notification only, as Natural England acknowledge that AA-34 route (for the construction phase) has been modified to avoid impacting ancient woodland Habitat at Highden Beeches.	Noted, the Applicant has no further comments on this matter at this time.
Document used: **[APP-183] 6.4.22.5 Environmental Statement - Volume 4 Appendix 22.5 Hedgerow survey report**					
J64	3.2.2 – 3.2.4	'At the time of reporting an estimate as to the likelihood of Importance has been made based upon a review of satellite imagery and records of adjacent and connected hedgerows that could be accessed for survey. Five of the hedgerows are unknown but potentially "important", with the remaining 25 hedgerows unlikely to be "important". …those considered "possibly important" are treated as if they qualify as important as a precaution'' – Natural England note that as a precautionary approach, unassessed hedgerows have been classified as being "important", however in Table 22-25 of the Terrestrial ecology and nature conservation report, a number of potentially important hedgerows are proposed to being notched to a total of 14m. This contradicts commitment C- 115, which states that important hedgerows will be reduced to a 6m loss.		Natural England request clarification on how specified potentially important hedgerows are being crossed. Why have these potentially important hedgerows been proposed to be notched with 14m of loss, when it should be reduced to 6m of loss?	Please see response in **reference J53**.
Document used: **[APP-184] 6.4.22.6 Environmental Statement - Volume 4 Appendix 22.6 Fisheries habitat survey report**					
J65	2.4.2 & 2.4.4	Natural England query whether periods of increased water flow (i.e. during heavy rainfalls) have been considered for the watercourses that are crossed by open trenching		Further information requested.	The timing of works on individual water courses and the measures taken to manage approaches with regards inclement weather will be detailed in the Code of Construction Practice secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. Commitment C-184 described in **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]** provides the basis for monitoring weather forecasts and scheduling works appropriately for the conditions.

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J66	2.4.5	'Final bank reinstatement may require further measures to stabilise the banks and prevent erosion' – Natural England would like to query the length of time for post construction monitoring and remedial works. Will this also be up to 10 years after completion of construction.		Clarification requested.	All reinstated habitats including watercourses and associated riparian vegetation will be maintained and monitored for 10 years. This is stated within the **Outline Landscape and Ecology Management Plan (LEMP) [APP-232]** Section 5. The delivery of a detailed Landscape and Ecology Management Plan, which accords with the outline version submitted as part of the application, is secured through Requirements 12 and 13 of the **Draft Development Consent Order [PEPD-009]**.
J67	Table 3-1 F	'Keep the duration of the isolation works as short as possible.' – is there a rough timeframe, or a maximum amount of time that can be stated? "Short as possible" is a lax term which should be further defined.		Natural England request clarification on the term "short as possible".	Paragraph 22.9.116 of **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]** describes the placement of duct blocks thus '*The trenches to receive the cable ducts will be dug and the duct blocks put in place. These blocks will then be buried using the existing material, and the bank sides returned to the original shape. Estimates are that the ducts will all be put in place within a 48 hour period*.' The associated haul road (where necessary) would be installed within this period, but would be in place for a longer period of time whilst being used to deliver the cabling works within the relevant section.
J68	General Comment	Natural England defer to our standing advice for fish, which can be found on Fish: advice for making planning decisions - GOV.UK (www.gov.uk)		Natural England defer to standing advice	Noted, the Applicant has no further comments on this matter at this time.
Document used: **[APP-185] 6.4.22.7 Environmental Statement - Volume 4 Appendix 22.7 Great Crested Newt environmental DNA survey report**					
J69	1.1.3	250 metre (m) survey buffer around the scheme boundary.		More justification will be required to explain why a 250m buffer has chosen to be pursued over a 500m buffer from the Order Limit.	A buffer of 250m was used, as the intent is to retain all ponds within the proposed DCO Order Limits (whether supporting great crested newts or not). Therefore, the impact in question is largely temporary displacement from areas within which cable ducts would be buried. Much of the habitat in these locations is suboptimal. The desk study highlighted the presence of great crested newts in most areas along the onshore cable route and the survey effort was tailored to confirm this finding.

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					It is the intention to compensate for the temporary and permanent loss of terrestrial habitats through the district level licence scheme operated in West Sussex by Nature Space. During the construction phase, the Ecological Clerk of Works (ECoW) will be responsible for minimising the risk of individual animals being injured or killed. The ECoW is secured through the **Outline Code of Construction Practice [PEPD-033]**, Requirement 22 of the **Draft Development Consent Order [PEPD-009]**.
J70	2.3.1	eDNA undertaken outside the optimal window.		It is recommended the best practice guidelines and supporting eDNA guidelines are adhered to. Where there is deviation, this could present constrained or incomplete data. It is recommended that Great Crested Newt (GCN) surveys are regularly updated to ensure that impacts are fully assessed, and compensation can be well situated.	Commitment C-214 of the **Commitments Register [APP-254]** (provided at Deadline 1 submission) provides for further great crested newt survey prior to construction and is secured through the **Outline Code of Construction Practice [PEPD-033]**, Requirement 22 of the **Draft Development Consent Order [PEPD-009]**.
J71	2.4.1	Land access, permissions denied. This has now meant that some of the data may not be comparable across breeding years.		Where waterbodies fall within the impact area or within the buffer zone (either 250m or 500m) efforts should be made to repeat access requests for the survey effort. Where access has been repeatedly denied, evidence should be retained of the requests that have been made to the landowners, should a European Protected Species (EPS) mitigation licence be required.	Commitment C-214 of the **Commitments Register [APP-254]** (provided at Deadline 1 submission) provides for further great crested newt survey prior to construction and is secured through the **Outline Code of Construction Practice [PEPD-033]**, Requirement 22 of the **Draft Development Consent Order [PEPD-009]**.

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				It is recommended that GCN surveys are regularly updated to ensure that impacts are fully assessed, and compensation can be well situated, should an EPS mitigation licence be required.	
J72	2.4.3	Waterbodies found to be dry.		These waterbodies should still be considered as part of any future survey effort. Waterbodies that occasionally dry out may still benefit GCN by removing predators from the waterbodies, meaning less competition in subsequent GCN breeding seasons.	Waterbodies that may occasionally dry out will be surveyed should they be present at the construction phase. Commitment C-214 of the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) provides for further great crested newt survey prior to construction and is secured through the **Outline Code of Construction Practice** **[PEPD-033]**, Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**.
J73	2.4.4	Three waterbodies were subject to eDNA testing only as Habitat Suitability Index (HSI) data was not collected by the surveyor.		It is recommended the best practice guidelines and supporting eDNA guidelines are adhered to. Where there is deviation, this could present constrained or incomplete data. Should an EPS mitigation licence be required, it is recommended that GCN surveys are regularly updated to ensure that impacts are fully assessed, and compensation can be well situated. Efforts should be taken to include HSI in future survey efforts to gain a	Best practice guidelines (including habitat suitability index (HSI)) and supporting eDNA guidelines will be adhered to. Commitment C-214 of the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) provides for further great crested newt survey prior to construction and is secured through the **Outline Code of Construction Practice** **[PEPD-033]**, Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**.

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				full picture of the waterbodies involved.	
J74	All	Consideration of all waterbodies.		From reviewing the Figures, there appears to a number of waterbodies that did not receive survey effort, such as ditches and lakes. In addition, please be mindful that GCN can also choose to utilise artificial structures for breeding, such as concrete lagoons, fire ponds or disused swimming pools. Where waterbodies have been discounted for suitability, this will need to be justified should an EPS mitigation licence be required.	Surveys were undertaken on waterbodies where great crested newt habitat was identified. Commitment C-214 of the **Commitments Register [APP-254]** (provided at Deadline 1 submission) provides for further great crested newt survey prior to construction and is secured through the **Outline Code of Construction Practice [PEPD-033]**, Requirement 22 of the **Draft Development Consent Order [PEPD-009]**. This will include a review of waterbodies present at the time, with survey work then tailored to meet results.
J75	All	GCN waterbodies fall within the development boundary.		Should an EPS mitigation licence be required, where GCN breeding waterbodies are being lost as a result of the development, consideration must be given to suitable and proportionate compensation. For every GCN waterbody lost, there would be the expectation of two suitable GCN waterbodies to be created.	As outlined in **reference J69**, all ponds within the proposed DCO Order Limits are to be retained.

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J76	All	Multiple clusters of GCN waterbodies and metapopulations across the length of the route.		Should an EPS mitigation licence be required, consideration needs to be given to the potential for fragmentation or severed connectivity and how this will be addressed through suitable mitigation and compensation solutions. Establishment periods for compensation habitat must be considered and built into Works Schedule approaches. This is particularly important in situations where the created compensation feature(s) is to be relied upon in a receptor area. It is also likely to be necessary to consider multiple receptor locations. Each captured GCN would ideally be moved no further than 500m from the location that it was captured and be moved to an area where it would have access to suitable supporting habitat for foraging resting and breeding.	Cable duct laying is expected to progress rapidly at approximately 150m per day. Therefore, exclusion from a working area due to active construction efforts will be transitory. However, it is recognised that the habitat prior to and following reinstatement (until it matures) will be less easy to commute through. No herptile fencing is expected to be used. Instead, a district level licensing approach to cover off temporary and permanent loss of terrestrial habitat will be used.
Document used: APP-186 6.4.22.8 Environmental Statement - Volume 4 Appendix 22.8 Passive and active bat activity report					
J77	All	The transects and static detector surveys with the above GLVA have provided a good understanding of the likely bat species assemblage to be impacted as well as the likely bat activity levels in the proposed DCO order limits. They have also been able to provide an indication of how bats are utilising the impacted habitat.		Should an EPS mitigation licence be required Natural England would expect that pre-construction surveys are	Commitment C-211 of the **Commitments Register [APP-254]** (provided at Deadline 1 submission) provides for further bat survey prior to construction and is secured through the **Outline Code of Construction Practice**

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		No hibernation surveys have been completed and therefore no information on the hibernation potential of the areas to be impacted has been provided.		conducted to further inform on bat activity as well as roost status and location. Surveys should be designed appropriately and proportionately for the impacts. An assessment of the hibernation potential as well as any follow up hibernation surveys should be included in any licence application. As Annexe II species have been identified during the desk studies then this may warrant surveys including Advanced Level Bat Survey Techniques to be able to fully understand the predicted impact to favourable conservation status.	**[PEPD-033]**, Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. Hibernation surveys were not carried out as no structures or underground sites will be affected by the Proposed Development. The ground level visual assessment (GLVA) provides information on the trees that have the potential to support roosting bats.
J78	2.4.10 3.4	Survey limitations -Some of the manual transect routes required modification due to a number of varying reasons this has now meant that some of the data may not be comparable across years. Also due to technical issues several of the passive detectors have not been successful in capturing useable data.		Should an EPS mitigation licence be required these surveys may need to be repeated if an ecological interpretation of the habitat and bat activity in these areas affected cannot be made due to lack of data.	Commitment C-211 of the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) provides for further bat survey prior to construction and is secured through the **Outline Code of Construction Practice** **[PEPD-033]**, Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. These will be used to inform future licence applications as necessary.
J79	3.1	Land access limitations.		Once the DCO is granted it would be expected that areas previously not surveyed due to access issues should be included in the pre-construction surveys.	Commitment C-211 of the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) provides for further bat survey prior to construction and is secured through the **Outline Code of Construction Practice** **[PEPD-033]**, Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**.

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					The intention will be to survey all areas including those with previous land access restrictions.
Document Used: [APP-187] 6.4.22.9 Environmental Statement - Volume 4 Appendix 22.9 Hazel dormouse report 2020-2022					
J80	2.4.2	It is referenced that "A full survey programme to confirm presence / likely absence of hazel dormouse in all suitable habitats within the proposed DCO Order Limits was not deemed proportionate, especially given the 'Rochdale Envelope' approach (Planning Inspectorate, 2018)."		Natural England would strongly recommend that the Best Practice Guidelines outlines in 'The Dormouse Conservation Handbook, Second Edition' are adhered to. Should you choose to deviate from this, detailed justification will be required to ensure that appropriate and robust conclusions have been drawn, should an EPS mitigation licence be required.	Commitment C-232 of the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) provides for further dormouse survey prior to construction and is secured through the **Outline Code of Construction Practice** **[PEPD-033]**, Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. Those undertaken during the detailed design process will not take a sampling approach as they will need to cover all suitable habitats for dormouse where vegetation removal is anticipated. These surveys will follow guidance in The Dormouse Conservation Handbook, Second Edition (Bright et al., 2006).
J81	2.4.3	It is referenced that "in line with CIEEM guidance (CIEEM, 2018), discrete 'survey sites' were selected for sampling."		Natural England would strongly recommend that the Best Practice Guidelines outlines in 'The Dormouse Conservation Handbook, Second Edition' are adhered to. Should you choose to deviate from this, detailed justification will be required to ensure that appropriate and robust conclusions have been drawn, should an EPS mitigation licence be required.	Commitment C-232 of the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) provides for further dormouse survey prior to construction and is secured through the **Outline Code of Construction Practice** **[PEPD-033]**, Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. Those undertaken during the detailed design process will not take a sampling approach as they will need to cover all suitable habitats for dormouse where vegetation removal is anticipated. These surveys will follow guidance in The Dormouse Conservation Handbook, Second Edition (Bright et al., 2006).

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J82	2.4.7	As the design of the Proposed Development evolved, a number of the survey sites are no longer within or adjacent to the proposed DCO Order Limits.		Suitability and connectivity of habitat can change and may mean that dormouse adapt how they utilise the landscape. It is recommended to regularly update the surveys based on the proposed impacts within and adjacent to the proposed DCO Order Limits. With the change in the Order Limits, it may be that the survey locations are updated/adjusted in line with the Best Practice Guidelines, 'The Dormouse Conservation Handbook, Second Edition'.	Commitment C-232 of the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) provides for further dormouse survey prior to construction and is secured through the **Outline Code of Construction Practice** **[PEPD-033]**, Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**.
J83	2.5.2 & 2.5.3	Nest tube deployment timing has ranged across the chosen sites.		It is recommended that nest tubes should also be left in place for several months. Nest tubes are most frequently occupied in May and August/September. Timing their deployment is therefore important. Setting them out in April may get early results, while setting them out in June may be less immediately successful. It is best to leave them out for the entire season, from March onwards, for checking in November.	Commitment C-232 of the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) provides for further dormouse survey prior to construction and is secured through the **Outline Code of Construction Practice** **[PEPD-033]**, Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**. Those undertaken during the detailed design process will not take a sampling approach as they will need to cover all suitable habitats for dormouse where vegetation removal is anticipated. These surveys will follow guidance in The Dormouse Conservation Handbook, Second Edition (Bright et al., 2006).

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J84	All	Linear impact route.		Should an EPS mitigation licence be required, consideration needs to be given to the potential for fragmentation or severed connectivity and how this will be addressed through suitable mitigation and compensation solutions. Establishment periods for compensation habitat must be considered and built into Works Schedule approaches. This is particularly important in situations where the created compensation feature(s) is to be relied upon in a receptor area. There should be the aim to commit to a proposal that results in no net loss, should an EPS mitigation licence be required.	Currently no dormouse have been identified within the proposed DCO Order Limits. However, if pre-construction surveys highlighted presence appropriate information, mitigation and compensation would be detailed within an European Protected Species (EPS) mitigation licence application. These surveys will follow guidance in The Dormouse Conservation Handbook, Second Edition (Bright et al., 2006).
Document used: [APP-188] 6.4.22.10 Environmental Statement - Volume 4 Appendix 22.10 Invertebrate survey report					
J85	General comment	Natural England defer to our standing advice for invertebrates, which can be found on Invertebrates: advice for making planning decisions - GOV.UK (www.gov.uk)		Natural England defer to standing advice	Noted, the Applicant has no further comments on this matter at this time.
Document used: [APP-189] 6.4.22.11 Environmental Statement - Volume 4 Appendix 22.11 Badger, otter & water vole survey report (CONFIDENTIAL) & [APP-063] 6.2.22 Environmental Statement - Volume 2 Chapter 22 Terrestrial ecology and nature conservation					
J86	General advice	**Badger Surveys:** Survey coverage was 90.75% and looked for badger field signs only during the extended phase 1 habitat survey. The surveys conducted have found no		Should a licence be required in the future Natural England can be	The Applicant welcomes Natural England's comments on badger survey coverage and conclusions.

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		badger setts that would be directly impacted by the proposed works in terms of sett closures. However, areas of loss of foraging ground have been identified. Natural England agree that the survey effort and survey area is appropriate and proportionate for the proposed low impact works that could affect badgers described regarding the proposed Rampion 2 Wind Farm works. Natural England agree that the preconstruction surveys should be conducted on habitat that is suitable to support badgers which is warranted to due to the high levels of badger activity in the area, the presence of badger setts that have already been recorded as well as taking into consideration the mobile nature of the species. Natural England would agree based on the survey evidence collected to date and the Environmental measures proposed in the above documents that overall impacts to badgers would be low.		consulted further. Surveys to inform on licence applications should be robust and proportionate for the scales of the proposed impacts of the development. NB If a main sett is required to be damaged or destroyed then bait marking surveys are likely to be required as part of the licence application to ensure the best placement for any artificial setts proposed.	Comments on licensing are noted. Commitment C-209 of the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) is secured through the **Outline Code of Construction Practice** **[PEPD-033]**, Requirement 22 of the **Draft Development Consent Order (DCO)** **[PEPD-009]** and provides for further badger survey prior to construction.
J87	General advice	**Water Vole:** It has been stated that 90.75% of water vole suitable habitat has been surveyed that included the area within the red line boundary as well as a 50m buffer. For a development of this type of work and size the Water Vole Mitigation Handbook (Box 1 survey design) (Dean, Strachan, Gow, & Andrews, 2016) would suggest surveying for water voles within the footprint of the development boundary as well as 200m upstream and downstream. The deviation from this has not been fully explained within the documentation. Due to the small footprint of the works, the short time frame that the works are scheduled to be taking place and that all habitats lost will be reinstated, Natural England agree that the overall impacts to water voles would be low.		Where it is not possible to avoid direct impacts to water vole additional surveys would be required. These surveys should be used to determine the presence or absence of water vole burrows as well as looking for field signs. Where possible the locations of the burrows and field signs should be mapped and used to inform on appropriate mitigation plans. Surveys should follow best practice as described in the Water Vole Mitigation Handbook (Dean, et al 2016). The environmental measures to reduce impacts on water vole habitats, as described within the above	The Applicant welcomes Natural England's comments on water vole survey conclusions and acknowledgement of the suitability of the proposed environmental mitigation measures. It is noted that the Water Vole Mitigation Handbook recommends surveying both 200m upstream and downstream of the development boundary. This was not possible due to access restrictions, however the Applicant is confident that during the detailed design phase sufficient survey and design avoidance and mitigation will be available to ensure water vole are maintained within the local area without changes to their local population viability. Commitment C-210 of the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) is secured through the **Outline Code of Construction Practice** **[PEPD-009]**, Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]** and provides for further water vole survey prior to construction. This will be undertaken at a scale relevant to the works proposed in individual areas. Commitments C-5, C-8, C-64, C-76, C-135 and C-255 of the **Commitments Register** **[APP-**

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				documents, such as the use of trenchless crossings, would appear to be appropriate and proportionate approaches. All works that may cause disturbance such as site traffic, use and storage of materials, noise and vibration should be considered, and water voles potentially displaced temporarily from the sites affected. Natural England would require additional information should a licence for displacement be required. This would include the full survey data (carried out under best practice) as well as any other limitations such as unsuitable habitat to displace into along with any necessary compensation proposals. As displacement over short areas is currently being proposed then Natural England's CL31 licence may be applicable.	**254]** (provided at Deadline 1 submission) all provide for necessary elements of water vole mitigation. These will be tailored to individual water course crossings following further post consent surveys with the aim being to avoid or reduce any potential effects. Should a mitigation licence be required this would be applied for following guidance provided by Natural England. These commitments are secured in the **Outline Code of Construction Practice** **[PEPD-033]** which is secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**.
J88	General advice	**Otter:** As above Natural England would expect that all suitable habitat within 200m of the proposed development footprint should be surveyed for the presence of otter. The deviation from this has not been fully explained within the documentation. Natural England are in agreement that otters can be scoped out for now and acknowledge that otters will be considered further during the implementation		No further comments.	Noted, the Applicant has no further comments on this matter at this time.

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		of the Ecological Clerk of Works role as well as in any preconstruction surveys.			
J89	General advice on water vole licensing	With regard to timings, Natural England can offer general comments at this stage to factor into scheme design. If necessary, displacement during spring is the recommended approach and most likely to achieve successful results. Please see Water voles: licence to intentionally damage or destroy water vole burrows by displacement (CL31) - GOV.UK (www.gov.uk) for more information on Natural England water vole class licence that may be applicable. Given the timescales, if following the necessary detailed surveys or duration of works, trapping water voles becomes necessary during spring or autumn, there is adequate time to prepare any receptor sites ahead of trapping and as such taking water voles into captivity over winter will not be considered a viable option. It should be noted that as a result in changes in legislation brought about by Environment Act 2021, if an individual water vole licence is required for the works the application now needs to be submitted under the new purpose of 'reasons of overriding public interest' using new forms which have been published on Gov.uk. https://www.gov.uk/government/publications/water-voles-apply- for-a-mitigation-licence-a11 In addition, A Reasoned Statement – is now mandatory for water vole applications that are submitted for the purpose of Reasons of Overriding Public Interest. With regards to compensation or suitable receptor sites, thought should be given to preparing local (same river catchment) receptor sites and / or areas of habitat that could be improved for water voles as soon as possible to give the habitat chance to establish and become suitable. If the receptor sites are not ultimately required for translocation these sites could equally be offered in terms of compensation for any water vole habitat likely to lost/disturbed during the works.		No further comments.	Noted, the Applicant has no further comments on this matter at this time.
J90	General Badger Advice (ABS):	Construction of an artificial setts must be complete prior to the exclusion works and there should be evidence that the badgers have found the set. Evidence could be gained from a variety of monitoring techniques. Attractive bait such as peanuts as well as bedding can be used to assist the badgers locate the artificial sett. Artificial setts must be constructed: - in a suitable location, - within the territory of the affected badger social group (this can be determined using a bait-marking survey) - away from main roads, public rights of way or sources of danger to badgers,		No further comments.	Noted, the Applicant has no further comments on this matter at this time.

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		- using materials and in a manner which is sufficiently robust for long-term use by badgers, - made of materials not harmful to badgers, - of a size to reflect the importance and extent of the sett to be lost - provide a dry and well-ventilated (but not draughty) refuge, - ideally with vegetative cover immediately around the structure. - with the minimum internal diameter of artificial tunnels, chambers and sett entrances, being 300mm.			
Document used: **[APP-190] 6.4.22.12 Environmental Statement - Volume 4 Appendix 22.12 Reptile survey**					
J91	General comment	Natural England defer to our standing advice for reptiles, which can be found on Reptiles: advice for making planning decisions - GOV.UK (www.gov.uk)		Natural England defer to standing advice	Noted, the Applicant has no further comments on this matter at this time.
Document used: **[APP-191] 6.4.22.13 Environmental Statement - Volume 4 Appendix 22.13 Breeding bird survey**					
J92	General comment	Natural England defer to our standing advice for breeding birds, which can be found on Wild birds: advice for making planning decisions - GOV.UK (www.gov.uk)		Natural England defer to standing advice	Noted, the Applicant has no further comments on this matter at this time.
Document used: **[APP-192] 6.4.22.14 Environmental Statement - Volume 4 Appendix 22.14 Onshore winter bird report 2020-2022**					
J93	General	Natural England acknowledge and welcome that two seasons of wintering bird surveys have been successfully undertaken, as previously requested within our original PEIR response (16 September 2021)		No further comment.	Noted, the Applicant has no further comments on this matter at this time.
Document used: **[APP-193] 6.4.22.15 Environmental Statement - Volume 4 Appendix 22.15 Biodiversity Net Gain information**					
J94	General comment	Natural England welcome the commitment of delivering a Biodiversity Net Gain (BNG) of at least 10% for all onshore and intertidal habitats subject to permanent or temporary loss as a result of the construction and operation of the proposed development.		Natural England would advise that it would be beneficial if RED submitted a rough metric to demonstrate the 10%, which is then to be built upon at detailed design stage.	The Biodiversity Metric 4.0 workbook that was used to demonstrate the extent of the shortfall in habitat, hedgerow and river units will be submitted at a future deadline following programmed discussions with Natural England, West Sussex County Council and South Downs National Park Authority.
J95	General comment	To avoid confusion and double counting, there should be a clear differentiation between the delivery of compensation and enhancement (BNG). Would highly recommend that a clear log is created, to identify and track delivery of compensation and enhancements (BNG).		Natural England advise that proposed delivery of compensatory habitat, and enhancement and habitat delivery from BNG, need to be set out in an easily understandable log. This is to prevent confusion	Please see response in **reference J52**.

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				and the risk for double counting.	
J96	3.1.7	Natural England note that Local Nature Recovery Strategies (LNRS) will be published by March 2025. However, we are aware that some local authorities are producing interim documents, so it is sensible to keep checking if an interim report is submitted for West Sussex.		No further comment. Notification only.	Noted, the Applicant has no further comments on this matter at this time.
J97	Table 4-2	Natural England note that there is no guarantee that hedgerows that have been 'temporary lost' will be reinstated.		Natural England note that 10 years of monitoring and hedgerow reinstatement is proposed. However, is it appropriately precautionary to propose that 100% of the 'temporary lost' hedgerow will be successfully reinstated within the 10 year post construction monitoring period? Greater evidence should be provided to support the claim that all temporary lost hedgerows will be reinstated.	There will be permanent loss of hedgerow at the onshore substation site at Oakendene as shown in Table 4-2 of **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the Environmental Statement **[APP-193]** equating to 0.62km of permanent loss. Other locations have hedgerow removed temporarily to allow for cable installation and access. These locations have all been assumed to have hedgerow reinstated. Given that hedgerows are routinely planted and managed across England, the Applicant is unsure as to why Natural England are concerned that hedgerow would not be able to be reestablished within a 10 year time frame. Especially as the plantings will be in locations already supporting this habitat type. Further discussions and clarifications with Natural England will be sought on this point.
J98	Table 4-1 & Table 4-2	Natural England note that numerous documents refer to loss of woodland that cannot be replaced due to the presence of cables, however the tables appear to show no permanent loss of woodland.		Natural England requests clarification on this discrepancy.	Table 4-1 of **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the Environmental Statement **[APP-193]** notes (see footnote 5) that reinstatement will be with mixed scrub. It is acknowledged that this could be clearer. However, it is noted that in the on-site habitat creation tab of the Biodiversity Metric workbook all woodland creation is associated with the onshore substation site at Oakendene only.
Document used: **[APP-194] 6.4.22.16 Environmental Statement - Volume 4 Appendix 22.16 Arboricultural Impact Assessment**					

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J99	General Comment	Natural England support the planting of native and naturalised species		No further comment	Noted, the Applicant has no further comments on this matter at this time.
J100	Species Selection Table 8-5	Natural England note that species mix reference C includes Quercus *cerris* – Turkey Oak, which is a non-native species, which can host parasitic wasps which can indirectly affect native oak trees.		Natural England advise that Turkey Oak be removed off the species mix reference C list, or justification should be provided for the selection of this species.	This is noted as an errata, see **1.1 Cover Letter [PEPD-001]** which was submitted at Pre-Examination Procedural Deadline A on 16 January 2024.
Document used: **[APP-195] 6.4.22.17 Environmental Statement - Volume 4 Appendix 22.17 Bat tree ground level visual assessment survey**					
J101	All	Natural England has no comments on the methods used in the ground level visual inspections surveys described in the above documentation.		n/a	Noted, the Applicant has no further comments on this matter at this time.
Document used: **[APP-224] 7.2 Outline Code of Construction Practice**					
J102	General comment	Natural England welcome the commitment to reinstate to pre-existing conditions in line Defra 2009 Code of Construction Practice for the Sustainable Use of Soils on Construction Sites, but this needs to go wider so that best and most versatile agricultural land is returned to the same Agricultural Land Classification (ALC) grade as pre-construction.		Natural England advise that this commitment should extend, more specifically, to returning best and most versatile agricultural land back to the same Agricultural Land Classification (ALC) grade as pre-construction. This design principle should also extend to land temporarily required for construction but being returned to a 'soft' non-agricultural after-use.	Commitment C-7 of the **Commitments Register [APP-254]** has been amended for the Deadline 1 submission as follows: '*Post construction, reinstatement of agricultural land, or other areas of 'soft' land use where the natural soil profile is present, will be ~~the work area will be reinstated~~ to pre-existing conditions, and if remaining in agricultural use to the original ALC grade, where the design allows (including over the onshore cable ducts which form the majority of the Proposed Development), ~~as far as reasonably practical~~ in line with the Materials Management Plan (MMP) (C-69) and Defra 2009 Code of Construction Practice for the Sustainable Use of Soils on Construction Sites PB13298. The stage specific Soil Management Plan(s) (SMP(s)) are to be used in conjunction with the MMP (and Soil Resource Plan – which will be integrated with and may form a sub-section of the MMP) to maximise the restoration of excavated soils to their pre-existing condition and location, and if this is not possible, to maximise the reuse of soils within the Proposed Development, minimising soils being relocated outside the Proposed Development or becoming waste.*'

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J103	C-7	ALC grades need to be maintained – 'as far as reasonably practical' seems to imply that restoration back to previous state is not necessarily a requirement.		Natural England advise that wording for commitment C-7 is modified, to state that ALC will be reinstated to their pre-existing condition.	Please see response in **reference J102**.
J104	C-27	*'Following construction, construction compounds will be returned to previous conditions as far as reasonably possible'*		Same as above comments – Natural England advise that commitment wording should be updated and should more accurately define the expectation for reinstatement.	Please see response in **reference J102**.
J105	5.3.5	Treatment of soil during reinstatement –Natural England note that it is unclear whether subsoil material is being retained and reinstated separately, in the same way as topsoil.		Natural England advise that both topsoil (typically top 25cm) and subsoil (typical remaining soil to 1.2m) require reinstatement.	Section 5.2 of the **Outline Soils Management Plan** **[APP-226]** states in paragraph 5.2.7 that topsoil and subsoil resources should be stripped and stored separately in low bunds. To ensure clarity, it is proposed to update this measure. This is noted as an errata, see **1.1 Cover Letter** which has been submitted at Deadline 1.
J106	C-12	Natural England note that the machinery to be used has not been specified.		Natural England advise that the machinery used should accord with best practice as set out in Defra 2009 Code of Construction Practice for the Sustainable Use of Soils on Construction Sites, namely using excavators and dump trucks. Use of bulldozers should not be permitted for any subsoils being returned to best and most versatile quality due to the high risk of soil compaction due to repeated trafficking. Bulldozers should not normally be used, other than if a modified loose tipping method of topsoil	The Applicant agrees and machinery to be used for soil handling is specified in paragraph 5.2.19 of the **Outline Soils Management Plan** **[APP-226]** which states that soil stripping, stockpiling, and removal from storage will be carried out in accordance with Section 5.4 in the Department for Environment, Food and Rural Affairs (Defra) Construction Code of Practice (Defra, 2009), and that soils will be reinstated, or placed, by tracked hydraulic excavator using the loose tipping method (Section 6.1 in the Defra Construction Code of Practice (Defra, 2009), with only gentle firming by tracked vehicles.

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				(not subsoil) replacement is employed in line with the Defra Construction Code.	
J107	Management Measures 5.5.4	Natural England advise that the Soil Management Plan (SMP) should show the areas and type of topsoil and subsoil to be stripped, haul routes to be used, the location and type of each soil stockpile.		Natural England advise that the SMP should be a key document feeding into the Materials Management Plan (MMP) and should include: the areas and type of topsoil and subsoil to be stripped, haul routes to be used, the location and type of each soil stockpile.	The Applicant is committed to developing a Soil Resource Plan (as defined in the **Outline Soils Management Plan [APP-226]**), during pre-construction, which is either a sub-section of the Materials Management Plan (MMP) or which cross-references the MMP, and which will cross-reference the Final SMP and the Site Waste Management Plan. The Soil Resource Plan will identify the areas and types of topsoil and subsoil to be stripped, haul routes, and the location and type of each stockpile.
J108	5.4.4	Natural England advise that soil handling should normally be avoided during November to March inclusive, irrespective of soil moisture conditions, because it will generally not be possible to establish vegetative cover over winter to help dry out soils and protect them from erosion.		Natural England advise that soil handling is avoided during November to March inclusive.	The **Outline Soils Management Plan [APP-226]** states that activities including topsoil stripping and trench excavation will be focused in drier periods where possible (typically between the start of May and end of October).
J109	5.4.4	Natural England advise that soils should only be handled in a dry and friable condition.		A field suitable method for assessing whether soils are in a dry and friable condition based on plastic limits is set out in Part One (Explanatory Note 4 – Table 4.2) of the Institute of Quarrying's Good Practice Guide for Handling Soils in Mineral Working. We advise that this approach together with the associated rainfall protocols should be adopted.	This approach is included as a requirement for assessing whether soils are sufficiently dry to be handled in Section 5.2 of the **Outline Soils Management Plan [APP-226]**.
J110	C-21	Natural England advise that an intention to remove vegetation over the winter period needs to be balanced against the risk of soil damage from use of heavy machinery on wet soils and leaving soils bare over-winter.		Natural England advise that in most circumstances, soils should remain vegetated over –winter and trafficking by heavy	A Vegetation Retention Plan is included within Appendix B of the **Outline Code of Construction Practice [PEPD-033]**. Scheduling of works in individual areas and approach to working over winter and vegetation removal will be covered in the stage specific

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				machinery should be avoided.	CoCP (secured through Requirement 22 of the **Draft Development Consent Order [PEPD-009]**) which will be submitted to and approved by the relevant planning authority in consultation with the statutory nature conservation body.
J111	C-257	It is unclear whether the proposed stage specific Materials Management Plans (MMPs) will be provided prior to consent or post consent as noted for the stage specific Soil Management Plans (SMPs).		Natural England request clarification.	The stage specific Soil Management Plans (SMPs) and Materials Management Plans (MMPs) will be provided post consent.
Document used: **[APP-226] 7.4 Outline Soils Management Plan**					
J112	1.2.5	Natural England concurs with this approach		We would be happy for stage specific surveys to be undertaken post consent, but would expect a more detailed desk-based assessment at the planning stage. Utilising published soil information to provide a likely indication of the soil properties and likely ALC grade and using site specific post 88 ALC data where available	The Applicant has utilised available published provisional agricultural land classification (ALC) data and post-1988 ALC data (see response in **reference J35**) in conjunction with ALC survey data obtained for the Proposed Development in the assessment. The likely presence of best and most versatile land has been considered throughout the design process and environmental assessment as an environmental constraint, initially using only the published provisional and post-1988 ALC information, and at the ES stage also using the ALC survey data obtained for circa 40% of the proposed DCO Order Limits. Due to the linear nature of the Proposed Development, there is limited opportunity for micro-siting to avoid specific ALC grades, however the Applicant is committed to doing this in the detailed design where possible, such as in the locating of joint bays (commitment C-259 of the **Commitments Register [APP-254]** provided at Deadline 1 submission and is secured through the **Outline Soils Management Plan [APP-226]**, Requirement 22 of the **Draft Development Consent Order [PEPD-009]**).
J113	1.2.6	Natural England support the provision of a Soil Management Plan (SMP) and we advise under para 5.1 of the Defra Construction Code of Practice (Defra, 2009). An SMP will normally form part of the Materials Management Plan for the site. It should include the following:		No further comments.	The Applicant is committed to developing a Soil Resource Plan (as defined in the **Outline Soils Management Plan [APP-226]**), during pre-construction, which will form part of the suite of management plans including the stage specific

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		• maps showing topsoil and subsoil types, and the areas to be stripped and left in-situ. • Methods (including machinery) for stripping, stockpiling, respreading and ameliorating the soils. • location of soil stockpiles and content (e.g. Topsoil type A, subsoil type B). • schedules of volumes for each material. • expected after-use for each soil whether topsoil to be used on site, used or sold off site, or subsoil to be retained for landscape areas, used as structural fill or for topsoil manufacture. • identification of person responsible for supervising soil management			Soils Management Plan (SMP), Materials Management Plan (MMP), and Site Waste Management Plan (SWMP). Commitment C-183 of the **Commitments Register** [**APP-254]** (provided at Deadline 1 submission) states that an *'Outline Soils Management Plan (SMP) has been developed (included in the Outline CoCP) to enable construction works to be completed in accordance with the Defra Code of Construction Practice for the Sustainable Use of Soils on Construction Sites 2009 to protect soil resources from damage during the construction phase'* and is secured by Requirement 22 of the **Draft Development Consent Order (DCO) [PEPD-009]**. In accordance with Section 5.1 of the Defra Construction Code of Practice (Defra, 2009), the Soil Resource Plan will include: • maps showing topsoil and subsoil types, and the areas to be stripped and left in-situ. • schedules of volumes for each material. • expected after-use for each soil whether topsoil to be used on site, used or sold off site, or subsoil to be retained for landscape areas, used as structural fill or for topsoil manufacture. • identification of the person responsible for supervising soil management. See response in **reference J106** regarding specification of methods (including machinery) for stripping, stockpiling, respreading and ameliorating the soils in accordance with the Defra Construction Code of Practice (Defra, 2009). Section 5.2 of the **Outline Soils Management Plan [APP-226]** details how soil stripping, storage and soil reinstatement are to be carried out. The stage specific SMP(s) are to be used in conjunction with the SRP and MMP to maximise the restoration of excavated soils to their pre-existing condition and location, and if this is not possible, to maximise the reuse of soils within the Proposed Development, minimising soils

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					being relocated outside the Proposed Development or becoming waste.
J114	3.1.2 & 3.1.3	The SMP should recognise the exact amount (%) of Best Most Versatile (BMV) land that has been identified in the ALC report. I.e. 53.5ha (23%) of grade 2 BMV land and 22.1ha (10%) of grade 3a BMV land totalling some 33% of the cable route is BMV land.		No further comments.	The Applicant has utilised available published provisional agricultural land classification (ALC) data and post-1988 ALC data (see response in **reference J35**) in conjunction with ALC survey data obtained for the assessment in **Chapter 20: Soils and agriculture, Volume 2** of the Environmental Statement **[APP-061]**. The Applicant proposes to add the summary findings to the **Outline Soils Management Plan [APP-226]** in the baseline agricultural land quality section. This is noted as an errata, see **1.1 Cover Letter** which has been submitted at Deadline 1.
J115	3.1.4	Predictive mapping would provide an additional indication of the ALC grade, and thus the potential impact on BMV agricultural land, however, it does not provide the soil details required to inform soil management which would feed into the Soil Management Plan. There is a risk of soil damage, ALC degradation and long term or permanent loss of BMV from cable installation.		Natural England advise that soil will need to be handled according to best practice and reinstated to a high standard to reduce the impacts. The results from a detailed ALC survey would provide soils data to inform a soil management plan for the whole site regardless of whether the use is permanent or temporary in nature	The Applicant agrees with this recommendation and is committed to full soil and agricultural land classification (ALC) survey coverage during pre-construction (see response in **reference J35** and commitment C-183 in Table 20-17 in **Chapter 20: Soils and agriculture, Volume 2** of the Environmental Statement **[APP-061]**), the results of which will inform the stage specific Soil Management Plans (SMPs) and Materials Management Plans (MMPs) to be produced post-DCO award during pre-construction.
J116	3.1.6	Natural England support this approach.		No further comments.	The Applicant welcomes Natural England's support on this matter.
J117	5.2.7	For topsoils the preference is for 1 to 3m height in order to minimize the impact of storage on biological processes, whereas for subsoils where the biological activity is lower, subject to safe operations, mounds are often raised to heights of 3 to 5m depending on the resilience of the soils to compaction. Additionally, will bunds be single or multi-tier? The ALC has identified gleyed subsoils therefore Natural England seek clarification of the rationale of storage over direct placement.		Further information requested.	In relation to stockpile / bund height, Section 5.2 of the **Outline Soils Management Plan [APP-226]** the Applicant proposes to update paragraph 5.2.7 to confirm a maximum topsoil stockpile height of 3m and maximum subsoil stockpile height of 5m. This is noted as an errata, see **1.1 Cover Letter** which has been submitted at Deadline 1. No requirement for multi-tier bunds has been identified and these are not recommended in the **Outline Soils Management Plan [APP-226]**.

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					In relation to handling and storage of gleyed subsoils requiring excavation and reinstatement, some storage in stockpiles is likely to be needed to enable construction. Section 5.2 of the **Outline Soils Management Plan [APP-226]** includes the field test for assessing whether soils are sufficiently dry to be handled. The Applicant is committed to minimising the period of temporary storage of excavated soils, where they can be reinstated at their original location along the onshore cable route, this is stated in commitment C-19 within Table 20-17 of **Chapter 20: Soils and agriculture, Volume 2** of the ES **[APP-061]** which is secured by Requirements 10 Programme of works, 22 Code of Construction Practice and 23 Construction Method Statement of the **Draft Development Consent Order [PEPD-009]**.
J118	5.2.10	As mentioned above soil colour has only been recorded for the soil pit location.		Where further survey is required, Natural England request that soil colour is recorded using the Munsell colour notation where borings are taken in addition to soil pit notations.	See response to **reference J34** confirming that colours were checked against the Munsell colour notation. Therefore, the Applicant proposes that the **Outline Soils Management Plan [APP-226]** is updated to confirm that in future agricultural land classification (ALC) surveys completed for Rampion 2, the Munsell colour notation will be used for all observation points. The proposed addition (as new paragraph 3.1.7) is noted as an errata, see **1.1 Cover Letter** which has been submitted at Deadline 1. The update will be made in the next iteration of the **Outline Soils Management Plan [APP-226]**.
J119	5.2.12	In addition to our previous comment above on C-257.		We advise that stockpiles should not be positioned within the root or crown spread of trees, or adjacent to ditches, watercourses or existing or future excavations.	The Applicant proposes that this recommendation is included as a measure in the **Outline Soils Management Plan [APP-226]**. The proposed addition (as new paragraph 5.2.18) is noted as an errata, see **1.1 Cover Letter** which has been submitted at Deadline 1.

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J120	5.2.22	The depth of decompaction should reflect the depth of compaction. Additionally, where compaction is likely to take place further consideration should be given to providing a decompaction strategy to maximise the effectiveness of decompaction methods. Further guidance may be found here; IQ Soil Guidance Sheet O.pdf (hubspotusercontent30.net)		Natural England advise that our comments should be considered by RED.	The Applicant proposes to update paragraph 7.1.3 of the **Outline Soils Management Plan [APP-226]** to state that the proposed decompaction strategy for the soil types present will be outlined in the stage specific Soils Management Plans, to be produced post-DCO Application during pre-construction, and that the decompaction measures will be designed to reflect the depth of compaction observed. This is noted as an errata, see **1.1 Cover Letter** which has been submitted at Deadline 1.
Document used: **[APP-2327].10 Outline Landscape and Ecology Management Plan**					
J121	4.2.4	*'Any remediation required post initial restoration will be driven by commercial considerations of farming practice (land drainage is not functioning as previously) as opposed to habitat quality for biodiversity'* – Natural England note that visual impacts to SDNP have not been considered in the requirement for remedial action.		Natural England would advise that remediation required post initial restoration for landscape visual impacts to the SNDP should be for material consideration, if initial landscape restoration works have failed.	The Applicant is reviewing the **Outline Landscape and Ecological Management Plan (LEMP) [APP-232]** secured through Requirement 12 of the **Draft Development Consent Order [PEPD-009]** and considering Natural England's recommendation in the updated Outline LEMP to be submitted at Deadline 3.
J122	4.6.2	Reinstatement of calcareous grasslands could prove challenging at certain times of year. The seed bank stockpile should be stored for the shortest amount of time possible, and ideally reinstated during the autumn or late winter/early spring.		Timing of reinstated of the seedbank should be considered, whilst also minimising the length of time spent in a stockpile. If reinstatement is to occur during the summer months, we would expect a greater level of monitoring (and perhaps watering) during the initial reinstatement. This is to improve the success rates of reinstatement during the summer months. Additional consideration should also be given to areas of calcareous grassland to be reinstated within the SDNP, as poor or failure	No calcareous grassland is located in areas where proposed construction works are to take place (although a large expanse at Sullington Hill is crossed by trenchless crossing method). Should calcareous grassland be identified during surveys prior to construction (this would only be expected in areas where access for survey has been previously limited) then appropriate measures for construction and reinstatement would be described in the stage specific Code of Construction Practice (CoCP) and Landscape and Ecology Management Plan (LEMP) that are secured through Requirements 22, 12 and 13 of the **Draft Development Consent Order [PEPD-009]**.

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				to reinstate could have visual landscape impacts upon the SDNP.	
Document used: **[APP-254] 7.22 Commitments Register**					
J123	General Comment	Natural England note that numerous commitments include flexible wording such as 'where practical, as far as reasonably practical, as far as reasonably possible, practicable minimum, as practical, or are not practical, wherever possible, minimal time possible, shortest practical timeframe'. Such wording reduces the confidence if the delivery of the proposed commitments, which also make up embedded mitigation measures. We observed such wording used in the following commitments C-1, C-6, C-7, C-12, C-17, C-19, C-27, C-67, C-75, C-78, C- 115, C-117 and C-128.		Natural England note there is regular use ambiguous terms utilised within a number of the embedded measures and commitments. As these embedded mitigation measures are to be relied upon for the project. Natural England advise that such terms should be further defined by RED, to understand the likely parameters and improve confidence in the delivery of these measures.	See response above in **reference J31**. The **Commitments Register [APP-254]** has been updated at Deadline 1 to signpost to where in the **Draft Development Consent Order [PEPD-009]** the commitment is secured.
J124	C-103	Natural England acknowledge the commitment that areas of temporary habitat loss will begin reinstatement within 2 years of loss. However, to ensure the successful reinstatement of sensitive habitats, or habitats in visually sensitive locations. This maximum timeframe of within 2 years, could be shortened for sensitive habitats and habitats in visually sensitive locations.		Natural England advise that an additional commitment could made for sensitive habitats (i.e. calcareous grassland being reinstated within 6 months of the temporary habitat loss)	The Applicant acknowledges Natural England's recommendation, but is not in a position to shorten this duration without detailed design information. It should be noted that as the cable duct installation will be delivered in sections the haul road will need to be retained regardless of habitat type being crossed (i.e. to avoid isolating parts of the works from the access point from the highway network).
J125	C-105	Lighting design commitment has not considered avoiding and minimising lighting impacts to the SDNP International Dark Sky Reserve.		Natural England advise that the commitment should also reference and consider minimising impacts SDNP International Dark Sky Reserve	See response provided in **reference J14**. Commitments C-66, C-105 and C-200 in the **Commitments Register [APP-254]** (provided at Deadline 1 submission) are secured through Requirements 12, 8 and the **Outline Code of Construction Practice [PEPD-033]**, Requirement 22 of the **Draft Development Consent Order [PEPD-009]** respectively and ensure minimisation of lighting effects from

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					construction of the onshore elements of the Proposed Development.
J126	C-112	Full risks of HDD operations at Climping Beach should be assessed in detail prior to commencement of operations.		Natural England request to be consulted in the event that remedial action requires works to be conducted within Climping Beach SSSI	Please see responses at **references J3** and **J6**. The Applicant notes that, should any remedial works be required, Natural England would be consulted.
J127	C-133	Natural England note that subsoil stockpiles should not be covered with topsoil as it will be impossible to remove the topsoil separately without mixing when soil is removed from the stockpile.		We advise that subsoil stockpiles should not be covered with topsoil and that this needs to be made clear in the text.	The Applicant proposes to update paragraph 5.2.7 in the **Outline Soils Management Plan [APP-226]** to confirm that subsoil stockpiles / bunds are not to be covered with topsoil to avoid mixing of topsoil and subsoil. This is noted as an errata, see **1.1 Cover Letter** which has been submitted at Deadline 1.
J128	C-148	During HDD operations under waterways, how will rivers appropriately be monitored during the night time.		Natural England advise that further clarification should be provided to outline how night time monitoring will be conducted during 24hr HDD operations.	Several embedded environmental measures have been put in place as part of the **Outline Code of Construction Practice (CoCP) [APP-224]** and secured via Requirement 22 of the **Draft Development Consent Order [PEPD-009]**. These measures will help minimise the potential risk of accidental contamination from drilling fluids upwelling and entering watercourses during the 24 hour HDD operations, which the Applicant considers to be very unlikely. This includes commitments C-234, C-236, C-241 and C-148 in the **Commitments Register [APP-254]** (provided at Deadline 1 submission) which are secured through the **Outline Code of Construction Practice [PEPD-033]**, Requirement 22 of the **Draft Development Consent Order (DCO) [PEPD-009]**. For example, C-241 (which covers day and night time fluid monitoring) sets out that "*during HDD activities, the drilling fluid engineer will carefully monitor the fluid usage in the recycling system and will quickly identify if fluid is being lost into the strata. If fluid loss is identified is identified there are a number of*

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Ref	Section / Subject	Natural England's Comments	RAG	Recommendations	Applicant's Response
					measures that can be taken to seal the bore, including the following: 1. *Modifying the drilling fluid properties to increase the effectiveness of the bentonite clay filter cake that lines the line of the borehole;* 2. *Standard process and procedures in place for drilling, data collection, and communication;* 3. *Appropriate drill fluid monitoring (fluid properties, fluid volume and flow, and downhole annular pressure);* 4. *Addition of stop-loss materials to bridge and seal larger voids in the soil; and* 5. *Modifying the mud weight (drilling fluid density) to either balance or counter the groundwater pressure depending on ground conditions.*" In summary the above measures ensure that the risk will be routinely monitored by drill crews observing fluid levels in their drill fluid tanks. Loss of circulation would result in fluid levels in the tank dropping. In the unlikely event of drilling fluid entering the rivers, drill crews would pull back and adjust fluid properties to remediate.
J129	C193 & C196	Natural England acknowledge that replacement planting will be characteristic of the area and resilient to climate change.		Natural England advise that careful consideration of the landscape characteristics of the SDNP should be considered when selecting replacement planting within the SDNP.	The replacement planting will be detailed within the stage specific Landscape and Ecology Management Plan for agreement with the relevant local planning authority and Natural England. This is secured through Requirements 12 and 13 of the **Draft Development Consent Order** **[PEPD-009]**.
J130	C-200	In addition to minimising lighting impacts to residents and walkers of the SDNP, consideration should also be made to minimising impacts to the SDNP International Dark Sky Reserve.		Natural England advise that the commitment should also reference and consider minimising impacts SDNP International Dark Sky Reserve.	See response provided in **reference J14**. Commitments C-66, C-105 and C-200 in the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) ensure minimisation of lighting effects from construction of the onshore elements of the Proposed Development.

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Ref	Section / Subject	Natural England's Comments	RAG	Recommendations	Applicant's Response
J131	C-216	Natural England welcome commitment for all ancient woodland to be retained. Natural England request clarification as to whether this commitment only relates to trenchless crossing operations.		Natural England seek clarification to the specifics of this commitment.	No ancient woodland or veteran trees would be lost to the Proposed Development. Commitment C-216 within the **Commitments Register** **[APP-254]** (provided at Deadline 1 submission) has been updated at the Deadline 1 submission. Similarly veteran trees would have an appropriate stand off (as per UK Government guidance Natural England and Forestry Commission, 2022) applied (commitment C-174 within the **Commitments Register** **[APP-254]** provided at Deadline 1 submission).
Document used: **[APP-255] 7.23 Outline construction method statement**					
J132	2.11.1 & 3.4.2	Natural England note that ground investigation works are to be conducted post DCO acceptance. As ground investigation works are key to understanding the risks and feasibility of trenchless crossings, Natural England has consistently advised that ground investigation works be brought forward to inform the Environmental Statement of the DCO submission, specifically for trenchless crossing locations below sensitive habitats (e.g. ancient woodland) and in visually sensitive locations (e.g. chalk scarp at Sullington Hill LWS).		Without details of trenchless crossing feasibility, it is difficult to assess the scale and significance of the effect of the proposal on protected sites and important ecologically sensitive areas. Natural England request clarification as to whether trenchless crossings investigations will be concluded prior to the commencement of the construction phase. If new or materially different environmental effects arise (compared to those assessed in the Environmental Statement), we advise that these should be identified prior to the commencement of the construction phase, to allow for greater scope to avoid any potential adverse environmental effects.	See response above in **references J3** and **J4**.

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Ref	Section / Subject	Natural England's Comments	RAG	Recommendations	Applicant's Response
				As previously mentioned, Natural England advise that contingency measures should be assessed within the Environmental Statement, in the event that trenchless crossings are not feasible at ecologically and visually sensitive sites.	

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Table 4-16 Applicant's Response to Addleshaw Goddard on behalf of Southern Gas Networks plc [RR-359]

Ref	Relevant representation comment	Applicant's response
2.39.1	Objection on behalf of Southern Gas Networks Plc (SGN) Addleshaw Goddard LLP acts on behalf of SGN and is authorised to make this relevant representation on its behalf in objection to the proposed Order. SGN is the licensed gas transporter for the Order area, and objects so as to ensure the protection of its interests in land and apparatus and the safe and effective operation of its gas transportation network. As a responsible statutory undertaker, SGN's primary concern is to meet its statutory obligations and ensure that any development does not impact in any adverse way upon those statutory obligations. The Promoter seeks powers within the Order for the compulsory acquisition of land and rights in which SGN is interested. SGN therefore wishes to protect its position in light of existing apparatus which is both within, and in the vicinity of, the proposed Order boundaries through suitable protective provisions being secured in the Order. SGN's rights to retain its infrastructure in situ and rights of access to inspect, repair and renew such apparatus within the limits of the respective Order must be maintained at all times, and access by SGN and its servants and agents to that apparatus for the purpose of its undertaking must not be restricted. Accordingly, SGN will require appropriate protective provisions to be included within the Order to protect its statutory undertaking and to ensure that public safety is not compromised. Equally both the Examining Authority and the Secretary of State will need to be satisfied that the project will not cause a serious detriment to the carrying out by SGN of its statutory undertaking before granting consent to the proposed Order. In view of the above, and pending agreement with the Promoter, SGN objects to the Promoter's application and reserves its right to make further representations during the Examination process should that be so necessary. However, SGN is in the process of reviewing the draft Order and associated plans and looks forward to engaging constructively with the Promoter in an effort to resolve all issues of concern. Should the Examining Authority require any additional information from SGN further to this representation, please contact Charlotte Jones of Addleshaw Goddard LLP, 3 Sovereign Square, Sovereign Street, Leeds LS1 4ER. Yours faithfully Addleshaw Goddard LLP.	The Applicant is in discussions with Southern Gas Networks Plc (SGN) to agree suitable Protective Provisions to maintain SGN's rights of access to inspect, repair and renew its infrastructure. There are several areas that require the provision and review of technical information which both parties are engaged with and anticipate to have resolved before the end of the Examination period. The Applicant will continue to seek compulsory acquisition rights to ensure that the Proposed Development can be delivered in parallel agree suitable protective provisions with SGN. The applicant will also engage with SGN to agree suitable arrangements in respect of property rights to avoid the need to exercise compulsory acquisition powers.

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Table 4-17 Applicant's Response to Southern Water Services Limited [RR-360]

Ref	Relevant representation comment	Applicant's response
2.40.1	Relevant Representation – Rampion 2 Offshore Windfarm Project This relevant representation is submitted on behalf of Southern Water Services Limited ("SWS"). SWS is the appointed water and sewerage undertaker under the Water Industry Act 1991 for the area of the proposed development. As a result, SWS is subject to a number of strict statutory duties for the supply of water to c. 2.6 million people and providing sewerage services to c. 46 million people. SWS is therefore a statutory undertaker for the purposes of section 127 of the Planning Act 2008. Should the proposed Development Consent Order ("the DCO") be made to authorise Rampion Extension Development Limited ("the Applicant") to construct, operate and maintain the proposed Rampion 2 Offshore Windfarm ("the Scheme"), it would permit development within the Order limits in areas where SWS is responsible for providing water and sewerage services. To fulfil its statutory duties, SWS maintains a wide range of apparatus that is critical to the continuing efficacy of its services. If made, the DCO would authorise the exercise of powers over or near land in which SWS maintains assets and/or has other rights for the purposes of discharging its statutory duties. Unchecked, the exercise of such powers in respect of SWS's interests would cause severe detriment to it. Furthermore, should the DCO be made, it would authorise works within certain of SWS's groundwater abstraction capture zones – further information is required from the Applicant to confirm that the construction and operation of the Scheme would not give rise to any adverse effects on these zones, and that sufficient mitigation measures will be put in place. SWS notes the 'standard' set of protective provisions for the benefit of statutory undertakers contained in Part 1 of Schedule 10 to the draft DCO. SWS intends to engage with the Applicant on these matters going forward but absent such an arrangement having yet been formalised, SWS is obliged at this stage to formally object to the DCO application on the basis of the Scheme causing severe detriment to SWS's apparatus and operations. SWS will engage with the Applicant with a view to reaching a satisfactory arrangement during the examination. SWS does not propose at this stage to submit a Principal Areas of Disagreement Summary ("PADS"), given SWS understands there to be no SoCG between SWS and the Applicant in front of the Examining Authority presently. However, SWS would be very happy to submit a PADS alongside any SoCG in due course, if the Examining Authority would consider it beneficial.	Relevant information in relation to Southern Water Services Limited's (SWS') groundwater abstraction zones is provided in **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]** and **Appendix 26.4: Hydrogeological Risk Assessment, Volume 4** of the ES **[APP-218]**. As noted in paragraph 26.6.72 of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]** the "…*proposed temporary construction corridor crosses the inner SPZ2s associated with the Southern Water public water sources at Angmering (10/41/310210, NGR TQ 064065) and Patching (10/41/310210, NGR TQ 091074), within the Worthing Chalk groundwater catchment. There is a proposed temporary construction and operational route along Michelgrove Lane within SPZ1 which will require minor road upgrades at several locations (A-26). There is also another light construction access route within Warningcamp SPZ1, which utilises existing farm tracks (A-25).*" Each of these matters were discussed with the Environment Agency and Southern Water at a targeted stakeholder meeting on 06 March 2023. Embedded environmental measures (C-246, C-250, C-251 and C-253) have been included within Table 26-20 in Section 26.7 of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]** to ensure the protection of these public water supplies (along with other licensed abstractions and PWSs) during proposed works. These measures are secured in the **Outline CoCP [APP-224]** and via Requirement 22 of the **Draft DCO [PEPD-009]**. Sections 26.9 to 26.10, and Table 26-26 and 26-27 of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]** conclude that there would be no significant adverse effects on those Southern Water public water supplies as a result of the implementation of embedded environmental measures. The Applicant is agreeing commercial terms with SWS to progress protective provisions discussions and it is anticipated that an agreement will be reached on them before the end of the Examination.

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Table 4-18 Applicant's Response to Corporation of Trinity House of Deptford Strond [RR-081]

Ref	Relevant representation comment	Applicant's response
2.44.1	Dear Sir / Madam, The Rampion 2 Offshore Wind Farm Order We refer to the above application for development consent. Trinity House is the General Lighthouse Authority for England, Wales, the Channel Islands and Gibraltar with powers principally derived from the Merchant Shipping Act 1995 (as amended). The role of Trinity House as a General Lighthouse Authority under the Act includes the superintendence and management of all lighthouses, buoys and beacons within its area of jurisdiction. Trinity House wishes to be registered as an interested party due to the impact the developments may have on navigation within Trinity House's area of jurisdiction. Trinity House is likely to have further comments to make on the application and the draft Order(s) throughout the application process.	The Applicant welcomes Trinity House as an Interested Party and looks forward to receiving further comments throughout the application process.

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Table 4-19 Applicant's Response to Forestry Commission (Forestry Commission) [RR-123]

Ref	Relevant representation comment	Applicant's response
2.45.1	The Forestry Commission is the government department responsible for protecting, expanding and promoting the sustainable management of woodlands. As part of our role, we are a non-statutory consultee for development proposals that include or are likely to affect ancient woodland. As a Non-Ministerial Government Department, we do not provide an opinion supporting or objecting to planning applications. Instead, we provide advice on the potential impact that proposed developments could have on trees and woodland using our local knowledge and expertise, planning policy and legislation that could be relevant and measures that could help to avoid or limit impacts and result in overall gains wherever possible. Our comments should be read in conjunction with our previous advice relating to this project. While we are concerned by the significant tree and woodland loss associated with Rampion 2, we recognise that effort has been made to explore less damaging options, and we welcome the selection of the preferred route that avoids direct ancient woodland loss, over more harmful alternatives, and the efforts for significant compensation measures being proposed.	The retention and protection of valuable trees, including ancient woodland is recognised by the Applicant and is reflected in the design of the Proposed Development and use of trenchless crossing techniques where possible and appropriate. An updated version of the **Commitments Register** **[APP-254]** has been submitted at Deadline 1, detailing the measures to be implemented to ensure avoidance of veteran trees (C-174) and ancient woodland (C-216), minimisation of woodland (C-204) and hedgerow loss (including where they support standard trees – commitment C-115) and are secured through Requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**.
2.45.2	We accept the principle of Horizontal Direct Drilling underneath the Michelgrove Park ancient woodland compared to more harmful methods, where evidence demonstrates that this is feasible and will not result in loss or deterioration of the ancient woodland.	Trenchless crossing techniques (e.g. Horizontal Directional Drill (HDD)) is a mitigation that has been used routinely for linear projects (electrical transmission cables and pipelines (e.g., gas, oil and water) for both large infrastructure and smaller scale applications. HDD has been used frequently to cross a range of sensitive ecological features including designated sites, ancient woodland, rivers and other priority habitats and make landfall for both offshore wind farm transmission cables and electrical interconnectors. For example, an HDD crossing of 550m through chalk substrate, with a sizeable change in elevation (80 to 90m difference) was successfully completed at Dunstable Downs on the Kensworth to Rugby Pipeline project for CEMEX in 2008 (including crossing part of Dunstable and Whipsnade Downs Site of Special Scientific Interest (SSSI). It is also notable that HDD within chalk substrate was carried out successfully on the route of the transmission cable for the Rampion 1 Offshore Wind Farm, as was an HDD to make landfall. The approach to minimising and effectively managing the risks of trenchless crossings is outlined in the **Outline Construction Method Statement** **[APP-255]** and the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** secured through Requirements 23 and 22 respectively of the **Draft DCO** **[PEPD-009]**. Paragraph 4.2.2 of Section 4.2 of the **Outline CoCP** **[PEPD-033]** states that '*This Outline CoCP is accompanied by a Crossing Schedule (Appendix A) identifying locations where trenchless crossings will be provided*'. Paragraph 4.2.3 of the **Outline CoCP** **[PEPD-033]** also states ***'****Should an unexpected obstacle or constraint be encountered that requires an additional trenchless crossing, this would be confirmed in the crossing schedule accompanying the stage specific detailed CoCP for approval by the relevant planning authority*'. The Applicant will not switch to open-cut trenching at Michelgrove Park. Commitment C-5 in the **Commitments Register** **[APP-254]** (updated for the Deadline 1 submission) has been revised to clarify that

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Ref	Relevant representation comment	Applicant's response
		Horizontal Directional Drill (HDD) or other trenchless technology will be deployed in accordance with Appendix A: Crossing Schedule of the **Outline CoCP** **[PEPD-033]**. Commitment C-216 (**Commitments Register** **[APP-254]**) (updated for the Deadline 1 submission) ensures that: • all ancient woodland will be retained; • a stand-off of a minimum of 25m from any surface construction works will be maintained in all locations from cable installation works; and • construction traffic may operate within 25m of an ancient woodland on existing tracks, with any track maintenance works being restricted to the current width. Works to provide safe access from the highway are required in three locations within 25m of ancient woodland notably accesses A-42, A-56 and A-57. At these locations specific design measures detailed in the **Outline CoCP** **[PEPD-033]** will manage any potential indirect effects on ancient woodland. Where ancient woodland is crossed via trenchless crossing a depth of at least 6m below ground will be maintained to avoid root damage and drill launch and retrieval pits will be at least 25m from the woodland edge. In addition, it is worth noting that the Applicant has specified a wider onshore cable corridor for Works No 9 at Michelgrove Park to retain the ability to construct the preferred trenchless crossing alignment in compliance with existing commitments. The Applicant intends to complete the trenchless crossings with the minimal impact to the sensitive environmental features and stakeholders.
2.45.3	One of the most important features of ancient woodlands is the quality and inherent biodiversity of the soil; they being relatively undisturbed physically or chemically. This applies both to Ancient Semi Natural Woodland (ASNW) and Plantations on Ancient Woodland Sites (PAWS). However, we are concerned that there appears to be minimal on-site assessments regarding the ground conditions to demonstrate that HDD will be viable underneath the ancient woodland site.	Section 7.8 within **Appendix 22.16: Arboricultural impact assessment, Volume 4** of the ES **[APP-194]** consider impacts of the Proposed Development on Ancient Woodland and states that there would be no loss of Ancient Woodland arising from the Proposed Development. The design of the onshore cable installation ensures that Ancient Woodland at Michelgrove Park and Calcot Wood will be crossed via trenchless methods. All avoidance and mitigation measures regarding ancient woodland and veteran trees has been specified following information provided in Natural England and Forestry Commission's joint Standing Advice for Ancient Woodland and Ancient and Veteran Trees, updated in January 2022. In addition, commitment C-216 (**Commitments Register** **[APP-254]**) (updated for the Deadline 1 submission) ensures that: • all ancient woodland will be retained; • a stand-off of a minimum of 25m from any surface construction works will be maintained in all locations from cable installation works; and • construction traffic may operate within 25m of an ancient woodland on existing tracks, with any track maintenance works being restricted to the current width. Works to provide safe access from the highway are required in three locations within 25m of ancient woodland notably accesses A-42, A-56 and A-57. At these locations specific design measures detailed in the **Outline CoCP** **[PEPD-033]** will manage any potential indirect effects on ancient woodland.

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Ref	Relevant representation comment	Applicant's response
		Where ancient woodland is crossed via trenchless crossing a depth of at least 6m below ground will be maintained to avoid root damage and drill launch and retrieval pits will be at least 25m from the woodland edge.
2.45.4	We are concerned that if consent is issued before this has been adequately demonstrated, there is a risk that HDD may not be deliverable and that more harmful methods (such as open-trench) may need to be considered which would result in direct loss and deterioration of ancient woodland.	The Applicant agrees that providing compensatory planting or enhancements early in the programme is beneficial and as such, the approach to Biodiversity Net Gain (see **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES **[APP-193]** is based on front-loading provision. The criteria for selecting suitable biodiversity units prioritises local delivery on land owned by those affected by the Proposed Development. Therefore, there is likely to be opportunities to enhance or plant new woodland on or close to the proposed DCO Order Limits. The commitment to biodiversity net gain is secured through Requirement 14 of the **Draft DCO** **[PEPD-009]**. Habitats temporarily lost during the construction phase will be reinstated. Commitment C-103 (**Commitments Register** **[APP-254]**) ensures that in the majority of locations (other than at temporary construction compounds, landfall, substation and cable joint bays) the reinstatement of habitats will begin within two years of their removal secured in the **Outline Code of Construction Practice** **[PEPD-033]** which is secured through Requirement 22 of the **Draft DCO** **[PEPD-009]**. It should be noted that woodland cannot be planted over the cable ducts and therefore, these areas will be replaced by mixed scrub. This is to ensure connectivity and provide valuable habitat.
2.45.5	During Examination, we advise the developer to provide sufficient evidence, based on on-site assessments that robustly demonstrates that the HDD method is feasible for the ancient woodland site in particular and that a sufficient contingency plans are in place to ensure that direct loss or deterioration of ancient woodland does not occur. Ancient woodlands, ancient trees and veteran trees are irreplaceable habitats. Paragraph 180© of the NPPF sets out that development resulting in the loss or deterioration of irreplaceable habitats should be refused unless there are wholly exceptional reasons, and a suitable compensation strategy exists.	The retention and protection of valuable trees, including ancient woodland is recognised by the Applicant and is reflected in the design of the Proposed Development and use of trenchless crossing techniques where possible and appropriate. An updated version of the **Commitments Register** **[APP-254]** has been submitted at Deadline 1, detailing the measures to be implemented to ensure avoidance of veteran trees (C-174) and ancient woodland (C-216), minimisation of woodland (C-204) and hedgerow loss (including where they support standard trees – commitment C-115) and are secured through Requirement 22 of the **Draft DCO** **[PEPD-009]**.
2.45.6	In considering the impacts of the development on Ancient Woodland, Ancient and Veteran trees, the planning authority should consider direct and indirect impacts resulting from both construction and operational phases. Please refer to Natural England and Forestry Commission joint Standing Advice for Ancient Woodland and Ancient and Veteran Trees, updated in January 2022. The Standing Advice can be a material consideration for planning decisions and contains advice and guidance on assessing the effects of development, and how to avoid and mitigate impacts. It also includes an Assessment Guide which can help planners assess the impact of the proposed development on ancient woodland or ancient and veteran trees in line with the NPPF.	Trenchless crossing techniques (e.g. Horizontal Directional Drill (HDD)) is a mitigation that has been used routinely for linear projects (electrical transmission cables and pipelines (e.g., gas, oil and water) for both large infrastructure and smaller scale applications. HDD has been used frequently to cross a range of sensitive ecological features including designated sites, ancient woodland, rivers and other priority habitats and make landfall for both offshore wind farm transmission cables and electrical interconnectors. For example, an HDD crossing of 550m through chalk substrate, with a sizeable change in elevation (80 to 90m difference) was successfully completed at Dunstable Downs on the Kensworth to Rugby Pipeline project for CEMEX in 2008 (including crossing part of Dunstable and Whipsnade Downs Site of Special Scientific Interest (SSSI). It is also notable that HDD within chalk substrate was carried out successfully on the route of the transmission cable for the Rampion 1 Offshore Wind Farm, as was an HDD to make landfall. The approach to minimising and effectively managing the risks of trenchless crossings is outlined in the **Outline Construction Method Statement** **[APP-255]** and the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** secured through Requirements 23 and 22 respectively of the **Draft DCO** **[PEPD-009]**. Paragraph 4.2.2 of Section 4.2 of the **Outline CoCP** **[PEPD-033]** states that '*This Outline CoCP is accompanied by a Crossing Schedule (Appendix A) identifying locations where trenchless crossings will be provided*'.

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Ref	Relevant representation comment	Applicant's response
		Paragraph 4.2.3 of the **Outline CoCP** **[PEPD-033]** also states *'Should an unexpected obstacle or constraint be encountered that requires an additional trenchless crossing, this would be confirmed in the crossing schedule accompanying the stage specific detailed CoCP for approval by the relevant planning authority'*. The Applicant will not switch to open-cut trenching at Michelgrove Park. Commitment C-5 in the **Commitments Register** **[APP-254]** (updated for the Deadline 1 submission) has been revised to clarify that Horizontal Directional Drill (HDD) or other trenchless technology will be deployed in accordance with Appendix A: Crossing Schedule of the **Outline CoCP** **[PEPD-033]**. Commitment C-216 (**Commitments Register** **[APP-254]**) (updated for the Deadline 1 submission) ensures that: • all ancient woodland will be retained; • a stand-off of a minimum of 25m from any surface construction works will be maintained in all locations from cable installation works; and • construction traffic may operate within 25m of an ancient woodland on existing tracks, with any track maintenance works being restricted to the current width. Works to provide safe access from the highway are required in three locations within 25m of ancient woodland notably accesses A-42, A-56 and A-57. At these locations specific design measures detailed in the **Outline CoCP** **[PEPD-033]** will manage any potential indirect effects on ancient woodland. Where ancient woodland is crossed via trenchless crossing a depth of at least 6m below ground will be maintained to avoid root damage and drill launch and retrieval pits will be at least 25m from the woodland edge. In addition, it is worth noting that the Applicant has specified a wider onshore cable corridor for Works No 9 at Michelgrove Park to retain the ability to construct the preferred trenchless crossing alignment in compliance with existing commitments. The Applicant intends to complete the trenchless crossings with the minimal impact to the sensitive environmental features and stakeholders.
2.45.7	We also request that we are consulted on the detailed design of mitigation and compensation measures for the significant impacts/loss to non-ancient woodland and the severance of connectivity of ancient woodland that will occur, to help ensure that measures are as effective as possible. Compensation measures should be sought that retain connectivity as far as possible and create compensatory linear habitat in the form of hedgerows and woodland creation. Other compensation measures that we request is bringing unmanaged woodland along the route into active sustainable management (in line with UK Forestry Standard) for all of the benefits that this can bring. We advise that the proposed Environmental Measures including compensatory planting are implemented as early in the programme as is reasonable to help them establish quicker and to minimise short term impacts.	Section 7.8 within **Appendix 22.16: Arboricultural impact assessment, Volume 4** of the ES **[APP-194]** consider impacts of the Proposed Development on Ancient Woodland and states that there would be no loss of Ancient Woodland arising from the Proposed Development. The design of the onshore cable installation ensures that Ancient Woodland at Michelgrove Park and Calcot Wood will be crossed via trenchless methods. All avoidance and mitigation measures regarding ancient woodland and veteran trees has been specified following information provided in Natural England and Forestry Commission's joint Standing Advice for Ancient Woodland and Ancient and Veteran Trees, updated in January 2022. In addition, commitment C-216 (**Commitments Register** **[APP-254]**) (updated for the Deadline 1 submission) ensures that: • all ancient woodland will be retained;

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Ref	Relevant representation comment	Applicant's response
		• a stand-off of a minimum of 25m from any surface construction works will be maintained in all locations from cable installation works; and • construction traffic may operate within 25m of an ancient woodland on existing tracks, with any track maintenance works being restricted to the current width. Works to provide safe access from the highway are required in three locations within 25m of ancient woodland notably accesses A-42, A-56 and A-57. At these locations specific design measures detailed in the **Outline CoCP [PEPD-033]** will manage any potential indirect effects on ancient woodland. Where ancient woodland is crossed via trenchless crossing a depth of at least 6m below ground will be maintained to avoid root damage and drill launch and retrieval pits will be at least 25m from the woodland edge.

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Table 4-20 Applicant's Response to The Crown Estate [RR-388]

Ref	Relevant representation comment	Applicant's response
2.46.1	The Crown Estate requests to be registered as an Interested Party in the examination of the Rampion 2 Offshore Wind Farm. Our interest in the project is that Rampion Extension Development Limited holds an Agreement for Lease from The Crown Estate.	The Crown Estate has interests in land and property and is a prescribed consultee. Two Agreements for Lease (one dated September 2020 and another dated February 2021) have been entered into between the Applicant and The Crown Estate for leases of seabed areas required for the Proposed Development wind farm array. The Applicant is working collaboratively with The Crown Estate to secure a third Agreement for Lease for the Offshore Transmission Assets, which lease is proposed to include land up to the mean high water mark. Solicitors have been instructed by both parties and are currently working up the Agreement. The Applicant is also seeking the consent of The Crown Estate as the "*appropriate Crown authority*" under section 227(5) of the Planning Act 2008 ("the Act") for the making of the proposed Rampion 2 Offshore Wind Farm Order in accordance with sub-sections (1) and (2) of section 135 of the Act. The Applicant's appointed solicitors are liaising with The Crown Estate's appointed solicitors in this regard.

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Table 4-21 Applicant's Response to the Maritime and Coastguard Agency [RR-221]

Ref	Relevant representation comment	Applicant's response
2.50.1	MCA will be responding to the ExA on matters concerning the safety of maritime navigation and maritime emergency response. MCA will provide comments on the Navigation Risk Assessment, Shipping & Navigation chapter of the EIA Report, and the content of the DCO and DML. The main issues for MCA are concerning vessel routeing, vessels' ability for continued safe passage, that risks to all vessels and craft are at an acceptable level, and the project is not at the detriment to the provision of Search and Rescue, and other emergency response.	The Applicant has received the Maritime and Coastguard Agency's response to the Rule 6 letter and will respond to their written representation at Deadline 2, in accordance with the Examination Timetable outlined in Rule 8 – Notification of timetable for the examination **[PD-007]**.

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Table 4-22 Applicant's response to Marine Management Organisation

Ref	MMO's Comment	Applicant's Response
1.1 Proposed Development Details		
MMO 1.1.1	Rampion 2 Offshore Wind Farm will be adjacent to and form an extension to the existing Rampion Offshore Wind Farm, and all infrastructure required to transmit the power generated, to the Bolney National Grid Substation.	Noted, the Applicant has no further comments on this matter at this time.
MMO 1.1.2	The Proposed Development includes an offshore generating station with an electrical export capacity of in excess of 100 Megawatts (MW) comprising up to 90 turbines, and array cables, in an area approximately 196 square kilometres (km^2), located approximately 13 kilometres (km) south of the Sussex coast located to the west of the existing Rampion Offshore Windfarm.	Noted, the Applicant has no further comments on this matter at this time.
MMO 1.1.3	The Proposed Development will comprise up to three offshore substations. Cables between the wind turbine generators (WTG) between the WTGs and the offshore substations, and between the offshore substations themselves and the landfall location at Climping, West Sussex. An underground cable connection between the landfall and a satellite substation known as Oakendene, and then onwards to connect into the existing National Grid substation at Bolney, together with an extension to the existing substation.	Noted, the Applicant has no further comments on this matter at this time.
MMO 1.1.4	Two DMLs are included in the draft DCO, one in relation to the generation assets and the second in relation to the transmission assets.	Noted, the Applicant has no further comments on this matter at this time.
2.1 Marine Plans		
MMO 2.1.1	The Applicant should demonstrate that they have considered whether the project adheres to all the relevant marine plans and policies in the area. MMO recommends that this is presented in a single, coherent document instead of a number of separate references throughout the submission. The relevant marine plan policies that should be met can be identified using the Explore Marine Plans tool and policy information on the following website: https://www.gov.uk/guidance/explore-marine-plans MMO requires the Applicant to detail how the proposed project is compliant with the relevant marine plans by producing a marine plan policy assessment in one document.	A single document showing adherence to the relevant marine plans and policies is being prepared to demonstrate the Proposed Development. This will be submitted at Deadline 2.
2.2 Fishing Community		
	The MMO has received the following Tier 1 complaint from commercial fisherman working along the Sussex Coast. The MMO views the complaint as a major issue, and resolution of the below is strongly recommended during examination, MMO has also advised the fisherman to register as an interested party and submit a representation. "*I'm a commercial fisherman from the Sussex coast and I would like to enlighten you about the devastation Rampion has caused to marine life.*	It should be noted that Rampion Offshore Windfarm (Rampion 1) and the Proposed Development are two distinct projects and entities, therefore the Applicant cannot comment on the works conducted during the construction of Rampion 1 or interfere with any resolution of any issues for which the MMO should contact Rampion Offshore Windfarm directly. However, there is ongoing dialogue between the two

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Ref	MMO's Comment	Applicant's Response
	I am talking about the Rampion wind farm 7 miles off the coast of Worthing Sussex that spans 7 miles long and 4miles wide and is soon to be extended west towards Littlehampton West Sussex. The reason why I am writing to you is, when all the trenches were dug on the sea bed for the cable routes also trenches and foundations dug within the windfarm it's self they told us fisherman in one of many meetings that we had with them that all the spoil I. E. rocks and boulders would be buried back down the trenches after the cables were laid and it would be large rocks, small rocks on top of that then sand and gravel to cover everything, well as we told them before they disturbed the sea bed it was compact and once they dug the trenches and put the cables down they realised that they were left with hundreds of thousands of tons of rocks that wouldn't go back down the hole. So obviously they needed somewhere to put these rocks and without asking anyone or even consulting us commercial fishermen who make our living from these grounds they dumped them in piles about every 50mtrs in a 7 mile radius! *The bay that we are in is renowned of shallow water so the first gale of wind all these piles were knocked over to leave loose boulders rolling around on what was already quite a hard seabed. Because the sea bed was already hard there is no way these rocks are going to bed in or take root so for the past 3 years it only takes a big tide or a little bit of wind and these rocks are rolling around, now this has absolutely ruined the area for us fishermen as we fish bottom nets we are ripping nets up quicker than we can make them most of the time, also it has caused devastation on the sea bed for marine life.* *If you look at a map and you draw a line from Beachy head to selsea bill everywhere to the north of that line is classed as a nursery area where young fish come in to the shallow waters to spawn, as fishermen we are at sea fishing every day and we have noticed that the young fish are not coming in to spawn anymore. The bream, cuttlefish, Dover sole, Brill, turbot, cod are not laying their eggs in this area simply because of all the rocks that are constantly moving around. We have noticed that mussel beds are not forming limpits are not attracting themselves to rocks also weed and kelp is not growing because of all the movement and this In its self if devastating to marine life. I understand that it's law that a polluter must clean up after itself, maybe they should be made to somehow remove these rocks.* *Rampion have all information and charts on where all of this spoil was dumped it was shown to us at one of many meetings so I guess they have this on record. Please look into this and this cannot be allowed to happen again in phase two of the windfarm."*	projects/entities and information generated by Rampion 1 has been and is still being taken into account by The Applicant.
3.1 Draft Development Consent Order		
MMO 3.1.1	MMO has reviewed the draft DCO and provided detailed comments below and in Table 1. The MMO considers that both DMLs (Schedule 11 and 12) are very similar in structure and therefore we have based our comments on Schedule 11, but at this stage these are equally applicable to Schedule 12.	The Applicant notes this comment from the MMO and has responded to each detailed comment in the table sections below.
3.2 Unexploded Ordnance (UXO)		
MMO 3.2.1	The MMO would like clarity on if the investigation of and the detonation of UXO's are included within the licenced activities. These are not part of any of the Works order or set out within the activities of Schedule 11 & 12, however a draft UXO marine mammal mitigation plan is proposed.	The activities to which the deemed marine licences apply do not include investigation and detonation of UXO. However, as the clearance of UXO may be required as part of the project the potential impacts have been assessed as part of the Environmental Impact Assessment. Further, these deemed marine licences will remain in force until the authorised project is decommissioned. The approval of the **Draft Unexploded Ordnance Clearance Marine Mammal**

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		Mitigation Protocol [APP-237] now provides confidence that mitigation can and will be secured if UXO are required to be detonated. This is consistent with other DCOs for offshore wind farms where separate licences for UXO detonation may be sought.
3.3 Article 5 Benefit of the Order		
MMO 3.3.1	MMO requests the word 'including' to 'excluding' is changed in the following text: *"(2) Subject to sub-paragraph (4), the undertaker may with the written consent of the Secretary of State—* *(a) transfer to another person ("the transferee") any or all of the benefit of the provisions of this Order (including the deemed marine licences) and such related statutory rights as may be agreed between the undertaker and the transferee; and 12* *(b) grant to another person ("the lessee") for a period agreed between the undertaker and the lessee any or all of the benefit of the provisions of the Order (including the deemed marine licences) and such related statutory rights as may be so agreed, except where sub-paragraph (7) applies, in which case no consent of the Secretary of State is required."*	Please see response to 3.3.3 below.
MMO 3.3.2	MMO requests the following sections are removed: *"[…]* *(5) The Secretary of State must consult the MMO before giving consent to the transfer or grant to another person of the benefit of the provisions of the deemed marine licences.* *[…]* *(12) Section 72(7) and (8) of the 2009 Act (Variation, suspension, revocation, and transfer) do not apply to a transfer or grant of the benefit of the provisions of any of the deemed marine licences to another person by the undertaker pursuant to this article."*	Please see response to 3.3.3 below.
MMO 3.3.3	Explanation for the text amendments Article 5(2)(a) allows for the permanent transfer of the DML with the consent of the Secretary of State (SoS), with Article 5(2)(b) allowing for a temporary grant to a lessee for an agreed period. Here the consent of the SoS is not required. Although this is not made explicit this is possibly intended because the transfers are temporary and there is a desire to avoid unnecessary delays. There is, however, no mechanism either in the DCO or the MCAA 2009 for a marine licence to be 'leased', because there are no provisions for the licence 'reverting' to the licence holder after the agreed lease period and the MMO does not recognise that this would create a more streamlined system. Rather it simply operates to create an additional administrative procedure for marine licences (and one not envisaged by Parliament) and with no clarity in how it will operate. The proposed drafting represents a clear departure from the MCAA 2009, which would normally require the licence holder (here "the undertaker") to make an application to the MMO for a licence to be transferred. Instead, this provision operates to make the decision that of the undertaker, with the SoS providing consent to the transfer, rather than the MMO as the regulatory authority for marine licences considering the merits of any application for a transfer. Article 5(5) is also of concern because there is no obligation for the SoS to take into account the views of the MMO when providing its consent. Furthermore, there is no obligation for the MMO to be informed of the decision of the SoS, notwithstanding its impact on the MMO as the licencing authority. From a regulatory perspective it is highly irregular that a decision to transfer a licence should not be the	The concern raised by the MMO appears to be in respect of the scope for a development consent order to include provision for the transfer of a marine licence at all. The ability for an undertaker to transfer a marine licence has been included in numerous DCOs for offshore wind farms dating back to 2015 when this power was included in The Dogger Bank Creyke Beck Offshore Wind Farm Order 2015. Whilst the drafting of the relevant provisions has evolved since that time, the principle of the ability to transfer a marine licence has remained, and features in the recently granted orders for East Anglia One North, East Anglia Two and Hornsea Four offshore wind farms. The wording of Article 5 in the **draft DCO [PEPD-009**], including for circumstances in which the Secretary of State's consent is required for a transfer of powers

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Ref	MMO's Comment	Applicant's Response
	decision of the regulatory authority in that area (the MMO) but instead should be subject to such a cursory process as is set out in Article 5(1)-(3).	under the Order and for their consultation with the MMO, follows the approach adopted in the recently made Orders including in respect of disapplication of sections 72(7) and (8) of the Marine and Coastal Access Act 2009.
MMO 3.3.4	Powers already existing to transfer. Article 5(12) explicitly disapplies sections 72(7) and (8) of the 2009 Act, which would otherwise govern these procedures. This conflicts with MMO's stated position that the DML granted under a DCO should be regulated by the provisions of 2009 Act, and specifically by all provisions of section 72. Section 72(7)(a) permits a licence holder to make an application for a marine licence to be transferred, and where such an application is approved for the MMO to then vary the licence accordingly (s. 72(7)(b)). This power should be retained and used in relation to the DML granted under the DCO.	Please see comments in 3.3.3 above.
MMO 3.3.5	Inconsistencies with PINS guidance The wording is inconsistent with the PINS Guidance on how DMLs should operate within a DCO. Advice Note Eleven, Annex B – Marine Management Organisation | National Infrastructure Planning (planninginspectorate.gov.uk) provides that where the undertaker choses to have a marine licence deemed by a DCO, the MMO, "*will seek to ensure wherever possible that any deemed licence is generally consistent with those issued independently by the MMO"*.	As noted above, the wording of the draft DCO [PEPD-009] is consistent with that included in a number of recently granted development consent orders for offshore wind farms. The terms of the deemed marine licences are intended to be consistent with those issued independently by the MMO.
MMO 3.3.6	Inconsistent with intention of the DCO regime Under the DCO legislative regime, it remains possible for developers (undertakers) to seek consent for a marine licence directly with the MMO (rather than having a DML integrated into the DCO). This flexibility underlines the fact that the DCO process simply integrates the existing mechanism for granting a marine licence. It should not therefore be used as a vehicle to alter or distort established process and procedures, such as those for the transfer of a marine licence.	Please see response above to 3.3.3. It is acknowledged that it remains open for an applicant to seek a marine licence directly from the MMO, as the Applicant intends to do in respect of clearance of UXO. .
MMO 3.3.7	Undermining enforcement capabilities of the MMO Piecemeal changes to aspects of the marine licence regime by way of the DCO can undermine the ability to enforce the marine licence. Under the DCO, it remains the MMO who will be responsible for enforcing marine licences (both deemed or granted independently). It is therefore vital that all marine licences are clear and enforceable. Consistency is a key element in achieving this, and this is best achieved by ensuring that the MMO has full responsibility for the marine licence process.	Please see response to 3.3.3 above.
MMO 3.3.8	Purpose of Secretary of State written consent is unclear. Not only is this an unnecessary (given that Parliament has already created a statutory regime for such a process), but it is also unclear what purpose the written consent of the SoS actually serves here. For example: If the intention is for the undertaker to be able to transfer the benefits under the terms of the DCO outside the established procedures under 2009 Act (which the MMO opposes), why is it considered necessary or appropriate for the SoS to 'approve' the transfer of the DML (even going so far as to include an obligation to consult the MMO)?);	Please see response to 3.3.3 above.

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Ref	MMO's Comment	Applicant's Response
	It is also unclear what criteria the SoS would be taking in determining whether to approve any transfer, and how this would differ from a consent granted by MMO under the existing 2009 Act regime?	
MMO 3.3.9	Practical concerns It is unclear how the wording would work in practice. It would be necessary to vary the licence to change the details of the licence holder at the beginning of the agreed period and then again at the end of the agreed period. The transfer of the licence would happen first, and then the licence would need to be varied. After the transfer of the licence, the new licensee would have a marine licence which would still be in the name of the licensee who had transferred the licence. The new licensee would have no authorisation to carry out any acts until the variation had taken place and until the variation had been affected the old licence holder would remain liable for any actions undertaken. Once again this creates additional confusion and administrative layers in lieu of relying on the existing legislative provisions. The procedure under s. 72 MCAA avoids this issue, which is an additional reason why it is preferred. Because of this confusion and potential duplication, it is the position of the MMO that these provisions should be removed, and that any transfer should be subject to the existing regime under the 2009 Act, with the decision maker remaining the MMO.	Please see response to 3.3.3 above.
3.4 Schedule 11 & 12 DMLs		
MMO 3.4.1	Determination dates The MMO strongly considers that it is inappropriate to put timeframes on complex technical decisions of this nature. The time it takes the MMO to make such determinations depends on the quality of the application made, and the complexity of the issues and the amount of consultation the MMO is required to undertake with other organisations to seek resolutions. The MMO's position remains that it is inappropriate to apply a strict timeframe to the approvals the MMO is required to give under the conditions of the DML given this would create disparity between licences issued under the DCO process and those issued directly by the MMO, as marine licences issued by the MMO are not subject to set determination periods. Whilst the MMO acknowledges that the Applicant may wish to create some certainty around when it can expect the MMO to determine any applications for an approval required under the conditions of a licence, and whilst the MMO acknowledges that delays can be problematic for developers and that they can have financial implications, the MMO stresses that it does not delay determining whether to grant or refuse such approvals unnecessarily. The MMO makes these determinations in as timely manner as it is able to do so. The MMO's view is that it is for the developer to ensure that it applies for any such approval in sufficient time as to allow the MMO to properly determine whether to grant or refuse the approval application. The MMO believes that if time scales are included within the DML for plans then these should be 6 months not 4 months. However, without prejudice to this position the MMO is open to discussions on which documents should be 6 months and which documents could be 4 months to take into account the concerns that the Applicant may have.	As the project comprises a nationally significant infrastructure project it is necessary for there to be a degree of certainty as to the programme for its delivery, particularly given the need for the project to contribute to the Government achieving its net zero target. Recently made DCOs for offshore wind farms include a mix of periods for determination of either four or six months. Four months is considered an appropriate period for the approval of submitted details. However, the Applicant is willing to work with the MMO, and Natural England as statutory nature conservation body, to identify any approvals which require a longer determination period.
3.5 Additional Conditions		

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Ref	MMO's Comment	Applicant's Response
MMO 3.5.1	MMO has set out comments on the draft DCO/DML in Table 1 in addition to these the MMO requests the following conditions are added to the DML.	Please see responses to **Table 1**, below.
MMO 3.5.2	Reporting of impact pile driving To comply with UK requirements on noise reporting the MMO requests this condition is added to both Schedule 11 and 12. *"25.— (1) Only when driven or part–driven pile foundations are proposed to be used as part of the foundation installation the undertaker must provide the following information to the Marine Noise Registry—* *(a) prior to the commencement of each stage of construction of the licensed activities, information on the expected location, start and end dates of impact pile driving to satisfy the Marine Noise Registry's Forward Look requirements:* *(b) at six month intervals following the commencement of pile driving, information on the locations and dates of impact pile driving to satisfy the Marine Noise Registry's Close Out requirements; and* *(c) within 12 weeks of completion of impact pile driving, information on the locations and dates of impact pile driving to satisfy the Marine Noise Registry's Close Out requirements.* *(2) The undertaker must notify the MMO in writing of the successful submission of Forward Look or Close Out data pursuant to paragraph (1) above within seven days of the submission.* *(3) For the purpose of this condition, "Forward Look" and "Close Out" mean the requirements as set out in the UK Marine Noise Registry Information Document Version 1 (July 2015) as amended, updated, or superseded from time to time."*	An additional condition has been included in the **draft DCO** **[PEPD-009]** based on the wording provided. It excludes (b) on the basis that pile driving is unlikely to be carried out continuously throughout the construction period due to seasonal piling restrictions likely to be put in place. The approach is consistent with that used in the East Anglia One North and East Anglia Two Offshore Wind Farm Orders.
MMO 3.5.3	Maintenance reporting To ensure the MMO is able to know the maintenance activities throughout the lifetime of the operation including understanding any impacts the MMO requests this condition is added to both Schedule 11 and 12. *"26.—(1) An annual maintenance report must be submitted to the MMO in writing within one month following the first anniversary of the date of commencement of operations, and every year thereafter until the permanent cessation of operation.* *(2) The report must provide a record of the licensed activities as set out in condition 3 during the preceding year, the timing of activities and methodologies used.* *(3) Every fifth year, the undertaker must submit to the MMO in writing, within one month of that date, a consolidated maintenance report, which will—* *(a) include a review of licensed activities undertaken during the preceding five years with reference to the reports submitted in accordance with condition XX(1) of this licence;* *(b) reconfirm the applicability of the methodologies and frequencies of the licensable activities permitted by this licence for the remaining duration of this licence."*	It is agreed that the **Outline Offshore Operations and Maintenance Plan** **(APP-238; OOMP)** should be referenced in the **draft DCO** **[PEPD-009]** and included in Schedule 16. This will be addressed at the next revision to the draft DCO at Deadline 3. The OOMP will also be updated at this stage to clarify the condition of the deemed Marine Licences pursuant to which the final document is to be submitted. The **draft DCO** **[PEDP 009]** includes provision for the undertaker to provide the MMO with its Operation and Maintenance Plan and further to the above amendment the draft DCO will be updated to require that this document is in accordance with the OOMP. Consequently, this additional condition is considered unnecessary.
MMO 3.5.4	Stages of construction To ensure the MMO has the full timetable for construction the MMO requests this condition is added to both Schedule 11 and 12. *"27.—(1) The licenced activities must not be commenced until a written scheme setting out the stages of construction of the authorised development seaward of MHWS has been submitted to and approved by the MMO in writing.* *(2) The stages of construction referred to in sub–paragraph (1) will not permit the authorised development to be constructed in more than one overall phase.* *(3) The scheme must be implemented as approved.* *(4) The written scheme referred to in sub-paragraph (1) must be submitted to the MMO in writing six months prior to the planned commencement of the licenced activities."*	The purpose of including a scheme of stages for the onshore works is to allow the discharge of requirements in respect of each stage separately. This is not relevant for the offshore works. However a construction programme is required to be submitted and approved prior to commencement of the authorised scheme pursuant to condition 11(1)(b) of Schedules 11 and 12 to the **draft DCO** **[PEPD-009].**

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Ref	MMO's Comment	Applicant's Response
MMO 3.5.4	Mitigation – seasonal restrictions To ensure it is clear to all involved the MMO requests any seasonal restrictions for any activities are clearly conditioned as a stand-alone condition and not within an additional plan.	The incustion of a standalone condition is not considered necessary. The MMO will be able to enforce compliance with the terms of a plan, including the Sensitive Features Mitigation Plan, the content and approval of which, and implementation, is secured by condition 11(1)(k) of Schedules 11 and 12 to the **draft DCO [PEPD-009]**.
3.6 Schedule 15 – Documents to be Certified		
MMO 3.6.1	To ensure clarity across all areas the MMO recommends this Schedule being split into 3 Parts: Part 1 documents forming the environmental statement to be certified Part 2 examination documents forming part of the environmental Statement to be certified Part 3 other documents to be certified.	This is not considered necessary at the present time due to the number of documents listed in schedule 16. However, should the number of documents increase consideration will be given to splitting them for clarity.
MMO Table 1	**Table 1. MMO comments on draft DCO/DML**	

Main DCO		MMO Comments	
Part 2	Principal Powers		
	Article 5 Benefits of the Order	See section 3.3 above. In summary, any reference to the MMO and DML should be removed from article for transfer of the benefit of the DCO. This also relates to Part 1 (7) of the DML, which also needs removing.	The Applicant's response in respect of article 5 is set out above in 3.3.3.
	Article 5(8)"prior to any transfer or grant under this article taking effect the undertaker must give notice in writing to the Secretary of State, and if such transfer or grant relates to the exercise of powers in their area, to the MMO and/or to the relevant planning authority."	MMO suggests removing reference to the MMO in the rest of article 5 because this transfer process should exclude the DML. However, there may be transfers which relate to the exercise of MMO's power beyond the deeming of the marine licence. If this is the case, please consult with the MMO. If there are no such likely scenarios then reference to the MMO in the rest of article 5 should be excluded, so that there is no confusion that this might apply to the DML.	See response at 3.3.3 above
Part 4	Supplemental Powers		
	Article 20 Public rights of navigation	MMO requests clarity on the inclusion of this article. MMO notes that the public rights of navigation where any permanent structures are located within territorial waters will be extinguished and will take effect 14 days after the undertaker has submitted a plan to the SoS, Martine Coastguard Agency and the MMO. However, there are no powers under the DCO for the MMO to comment or refuse.	This article is included because the wind farm is partially located in territorial waters where there is a right of public navigation. The article confirms the suspension of public rights of navigation where permanent infrastructure is located. This infrastructure will be located in accordance with the detailed design plan to be submitted and approved by the MMO under condition 11(1)(a) of the deemed marine licences, as required by condition 12.

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Ref	MMO's Comment			Applicant's Response
	Schedule 1			
	Authorised Project			
	Part 3 Requirements	Detailed offshore design parameters		
		5(4) "The number of cable crossings comprising Works No.2 must not exceed four unless otherwise agreed with the MMO"	MMO acknowledges the reference of MMO involvement and would like clarity on what situations would require agreement for further cable crossings. If cable crossings are identified would the associated cable protection be within the maximum permitted area and volume?	The Applicant notes that potential cable crossings relate to a single interconnector project, which is yet to be determined. The need for additional crossings would only arise if additional cable projects were brought forward; given no such projects are known, no additional crossings above the four sought within the DCO are reasonably foreseeable. The Applicant therefore confirms that it is not intended that any additional cable crossings will be required. Any associated cable protection would require to be within the cable protection parameters. Should any additional cable protection be required this would be subject to separate approval.
	Part 3 Requirements	Programme of works 10(1) No part of the authorised project within the Order limits landward of MLWS is to commence until a written programme identifying the stages of those works has been submitted to and approved by the relevant planning authorities.	MMO notes that this sets out the programme of works for onshore activities but also Works No. 6, it would be beneficial to be consulted on the programme for this work or this could be included within the Stages of Condition requested above.	This requirement requires the identification of stages in order to facilitate the discharge of conditions on a staged basis. Provision has been made in the **draft DCO** [**PEPD-009**] for consultation with the MMO in respect of Work No. 6.

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Ref	MMO's Comment			Applicant's Response
	Part 3 Requirements	Onshore constructions method statement 23(1) "No stage of the authorised project within the Order limits landward of MLWS is to commence until an onshore construction method statement for the construction method statement has been submitted to and approved in writing by the relevant planning authority in consultation with Natural England and to the extent that it relates to works seaward of the mean high water springs comprising Work No. 6, the MMO."	MMO notes that we will be consulted on the onshore construction method statement insofar as it relates to works seaward of the mean highwater springs (Works 6). MMO would like clarity on what the timescale for this consultation would be.	The construction method statement for the stage including Work No. 6 will require to be approved prior to the commencement of any works comprising that stage. It will be for the relevant planning authority to arrange consultation with the MMO.
	Schedule 11 – Deemed Marine Licence			
	Part 1			
		"array cable" means … Works	A space needs to be inserted here "Works No. 1"	This has been addressed in the **draft DCO** **[PEPD-009]**.
		"draft UXO marine mammal mitigation plan"	MMO requests this is removed if UXO activities are not part of the licenced activities.	It is proposed that this document is still approved as part of this application. Please see the Applicant's response to 3.2.1.
		"draft piling marine mammal mitigation plan"	MMO requests an outline plan being included part of a certified documents.	A draft piling marine mammal mitigation protocol is included in Schedule 16 for certification (amended from 'plan').
		2.(b) "the disposal of up to 2,568,500m3"	MMO recommends this is amended to m3.	The area is already stated as cubic metres so 'm³' has been deleted in the **draft DCO** [**PEPD-009**]**.**
		2.(b) "the disposal […] comprising the array area […]"	MMO notes that at present, this is an extremely broad disposal area. MMO acknowledges that it is common for offshore wind farms to ask to designate the whole area as a disposal site to allow them to clear the substrate for construction without needing to lift the material and transport to another disposal site. MMO welcomes the site characterisation report and has requested further information in Section 4.4 before the MMO is able to provide disposal site references.	Noted

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Ref	MMO's Comment			Applicant's Response
		7. "The provisions of section 72 (variation, suspension, revocation and transfer) of the 2009 act apply to this licence except that the provisions of section 72(7) and (8) relating to the transfer of the licence only apply to a transfer not falling within article 5 (benefit of the Order) of the Order."	This provision needs to be removed, along with the other sections of Article 5. See above section 3.3.	Please see response above regarding article 5.
		8. "With respect to any condition which requires the licensed activities to be carried out in accordance with the plans, protocols or statements approved under this licence, the approved details, plan or scheme are taken to include any amendments that may subsequently be approved in writing by the MMO."	MMO requests that the following is added: "subsequent to the first approval of those plans, protocols or statements provided it has been demonstrated to the satisfaction of the MMO that the subject matter of the relevant amendments do not give rise to any materially new or materially different environmental effects to those assessed in the environmental information."	It is not considered necessary to include this wording as this is covered by **paragraph 9**.
		9. "…satisfaction of the MMO that it is unlikely to give rise to any materially new or materially different environmental effects from those assessed in the environmental statement."	MMO requests that this is updated to state: "…satisfaction of the MMO that the subject matter of the relevant amendments do not give rise to any materially new or materially different environmental effects to those assessed in the environmental information."	The change to environmental information is inappropriate as environmental statement is the document to be certified.
	Part 2 Conditions			
	Design parameters	Condition 2. – (2) "Work No 2"	MMO recommends this is changed to "Work No. 2"	This has been addressed in the **draft DCO** **[PEPD-009]**.
		Condition 2(6) "Any cable protection authorised under the licence must be deployed within 15 years from the date of the Order unless otherwise agreed with the MMO."	MMO would like to understand the reason for the inclusion of this condition. MMO notes this is for 15 years when the lifetime of a licence could be longer. Does this include cable protection within the maintenance phase? This should be clear within the DML.	This condition has been amended at the request of Natural England to allow cable protection to be deployed within 10 years from the commencement of licenced activities in order to control the period during which this activity can take place following the grant of the licence. Cable protection may be deployed in the operation and maintenance phase subject to the 10 year time limit and the parameters for cable protection in the **draft DCO** **[PEPD-009];** this would be subject to the Operation and Maintenance Plan secured by condition 3 of the draft DCO.
	Maintenance of the authorised project	Condition 3(1) "MMP"	This is a typo and should be corrected to MMO.	This has been addressed in the **draft DCO** **[PEPD-009]**.

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		Condition 3(1) "Not more than 3 months following the completion of construction of the authorised project the undertaker must provide the MMO with an operations and maintenance plan."	MMO requests that this is updated to refer to the outline operation and maintenance plan "in accordance with the outline…". This is to ensure all parties and consultees are clear what activities will take place within the Operation and Maintenance phase and ensure all required sections within the plan have been highlighted at this stage.	It is agreed that the **Outline Offshore Operations and Maintenance Plan** (OOMP) **[APP-238]** should be referenced in the **draft DCO** **[PEPD-009]** and included in Schedule 16. This will be addressed at the next revision to the draft DCO at Deadline 3. The OOMP will also be updated at this stage to clarify the condition of the deemed Marine Licences pursuant to which the final document is to be submitted.
		Condition 3(5) "Where the MMO's approval is required under paragraph (3), approval may be given only where it has been demonstrated to the satisfaction of the MMO that the approval sought is unlikely to give rise to any materially new or materially different" environmental effects from those assessed in the environmental statement."	MMO requests that this is updated to state: "…satisfaction of the MMO that the subject matter of the relevant amendments do not give rise to any materially new or materially different environmental effects to those assessed in the environmental information."	The change to environmental information is inappropriate as environmental statement is the document to be certified.
	Extension of time periods	Condition 4(1) "Any time period given in this licence given to either the undertaker or the MMO may be extended with the agreement of the other party."	All agreements must be in writing and this should be clear throughout the DML.	Reference to agreements being in writing has been included throughout the dML.
	Notifications and inspections	Condition 5(6) "The undertaker must inform the MMO Coastal Office in writing at least five days prior to the commencement of the licensed activities or any part of them and within five days of the completion of each licenced activity."	MMO requests that this is updated to "at least 14 days prior to the commencement of the licensed activities or any part of them"	This has been left as 5 days in accordance with a set of requested conditions provided by Trinity House noted to have been agreed with the MMO and MCA
	Aids to navigation	Condition 6(1)	This is a very long single sentence and the MMO recommends breaking into two or three sentences to provide clarity of meaning.	This condition has been reworded in accordance with conditions provided by Trinity House noted to have been agreed with the MMO and MCA.
		Condition 6(3)	Reference to 11(1)(o) is incorrect, MMO requests that this is please checked.	Condition 6(3) refers to the aids to navigation management plan agreed pursuant to condition 11(1)(o). Condition 11(1)(o) requires '*an aid to navigation management plan to be agreed in writing by the MMO following consultation with Trinity House, to include details of how the undertaker will comply with the provisions of condition 6*.'

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Ref	MMO's Comment			Applicant's Response
	Chemicals, drilling and debris	Condition 9 "(1) Unless otherwise agreed in writing by the MMO all chemicals used in the construction of the authorised project must be selected from the List of Notified Chemicals approved for use by the offshore oil and gas industry under the Offshore Chemicals Regulations 2002(a) (as amended)."	MMO suggests that this condition is changed to the wording below, as the offshore chemical regulations 2002(a) (as amended) do not apply to chemicals used by the offshore wind industry, and the regulations only pertain to chemicals used in the oil and gas industry. "Unless otherwise agreed in writing by the MMO all chemicals, paints and coatings used in the construction and operation and maintenance of the authorised project (not subject to other regulations) with a pathway to the marine environment must be approved by the MMO. Chemicals should be submitted to the MMO at least eight weeks prior to the use of the chemical, unless otherwise agreed in writing by the MMO." Please also see section 4.4.19 - 4.4.23 within the ES below for more information about notifications to the MMO.	The wording has not been amended as it is consistent with the approach adopted in a number of previously granted DCOs for windfarms including the Hornsea Four Offshore Wind Farm Order, 2023, in order to provide prior approval for some chemicals. Written approval will be required for the use of any chemical not included in the list approved under the Offshore Chemicals Regulations 2002.
		Condition 9(5)	Please update "District Marine Office" to "Local Marine Office".	This has been addressed in the **draft DCO** **[PEPD-009]**.
		Condition 9(8) *"All dropped objects must be reported to the MMO using the Dropped Object Procedure Form as soon as reasonably practicable and in any event within five days of the undertaker becoming aware of an incident. On receipt of the Dropped Object Procedure Form, the MMO may require relevant surveys to be carried out on the undertaker (such as side scan sonar) if reasonable to do and the MMO may require* obstructions which are hazardous to other marine users to be removed from the seabed at the undertaker's expense if reasonable to do so."	MMO requests this wording is amended to be in line with current consents: "(1) The undertaker must report all dropped objects to the MMO using the dropped object procedure form as soon as reasonably practicable and in any event within 24 hours of becoming aware of an incident. (2) On receipt of the dropped Object Procedure Form, the MMO may require, acting reasonably, the undertaker to carry out relevant surveys. The undertaker must carry out surveys in accordance with the MMO's reasonable requirements and must report the results of such surveys to the MMO. (3) On receipt of such survey results, the MMO may, acting reasonably, require the undertaker to remove specific obstructions from the seabed. The undertaker must carry out removals of specific obstructions from the seabed in accordance with the MMO's reasonable requirements and at its own expense."	This condition has been amended to remove reference to notice having to be given within five days; notice must therefore be given as soon as reasonably practicable following the undertaker becoming aware of an incident in all instances; this is consistent with the condition imposed on the grant of the Hornsea Four Offshore Wind Farm Order, 2023. The wording of the condition in the **draft DCO** **[PEPD-009]** is otherwise consistent with the provision included in previously made DCOs for offshore wind farms including Hornsea Four, and East Anglia One North and Two.

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Ref	MMO's Comment			Applicant's Response
	Force majeure	Condition 10 "(1) If, due to stress of weather or any other cause the master of a vessel determines that it is necessary to deposit the authorised deposits within or outside of the Order limits because the safety of human life or if the vessel is threatened, within 48 hours full details of the circumstances of the deposit must be notified to the MMO. (2) The unauthorised deposits must be removed at the expense of the undertaker unless written approval is obtained from the MMO."	The MMO recommends this clause is taken out as it duplicates s.86 of MCAA and causes confusion. Although s.86 of MCAA does not include timescales for submission to the MMO of the undertaking of these actions. The defence under Section 86 of MCAA has two limbs, and in the event that the undertaker fails to notify the appropriate licensing authority, in this case the MMO, within a reasonable time of their actions (Section 86(2) "matters") the defence cannot be relied upon in the event of any enforcement action. If the applicant maintains that the proposed provision does not duplicate Section 86 MCAA and instead introduces a reporting requirement which did not previously exist, the MMO advises that it should be made clear that this provision is in addition to Section 86 and its requirements.	The condition imposes a requirement to report any deposits made in an emergency within 48 hours which can be enforced alongside section 86. Similar provision is included in numerous Orders for offshore wind farms including East Anglia One North and Two, and Hornsea Four. It is not considered appropriate for the Order, which will be a statutory instrument, to state that this is in addition to the terms of section 86 of the Marine and Coastal Access Act 2009.
	Pre-construction plans and documentation	Condition 12(1-3)	All reference of timescales must be six months not four months. Please see further comments in 3.4.1 above.	Please see response above regarding time periods for determination of applications for approval.
		Condition 12(3)	MMO requests the condition is updated to the following wording: "(3) Unless otherwise agreed in writing with the undertaker, the MMO must use reasonable endeavours to determine an application for approval made under condition 11 as soon as practicable and in any event within a period of 6 months commencing on the date the application is received by the MMO." Please see further comments in 3.4.1 above.	Please see response above regarding time periods for determination of applications for approval.
	Offshore safety management	Condition 14	MMO is currently discussing this wording with the MCA to confirm the most recent agreed wording.	Noted

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Ref	MMO's Comment			Applicant's Response
	Reporting of engaged agents, contractors and vessels	Condition 15 "15.—(1) The undertaker must provide the following information to the MMO— (a) the name and function of any agent or contractor appointed to engage in the licensed activities within seven days of appointment; and (b) each week during the construction of the authorised project a completed Hydrographic Note H102 listing the vessels currently and to be used in relation to the licensed activities. (2) Any changes to the supplied details must be notified to the MMO in writing prior to the agent, contractor or vessel engaging in the licensed activities."	The following suggestions are for changes to improve clarity, but note also change to 24 hours' notice before carrying out activity, rather than a week after appointment. "(1) The undertaker must provide the name, address and function of any agent, contractor or subcontractor that will carry out any licenced activity listed in this license on behalf of the undertaker to the MMO in writing no less than 24 hours before the agent, contractor or subcontractor carries out any licensed activity; and (2) Any changes to the name and function of the specified agent, contractor or subcontractor that will carry out the specified licenced activities must be notified to the MMO in writing prior to the agent, contractor or subcontractor carrying out the licensed activity. (3) The undertaker must ensure that a copy of this licence and any subsequent revisions or amendments has been provided to any agents, contractors or subcontractors that will carry out the licensed activity on behalf of the undertaker prior to them carrying out any licensed activity."	This change has been addressed in the **draft DCO [PEPD-009]** as requested but reference to provision of information regarding vessels has been retained.
	Pre-construction monitoring and surveys	Condition 16(1)(b) "Postconstruction"	This wording should be consistent throughout the condition.	This change has been addressed in the **draft DCO [PEPD-009]**.
		Condition 16	MMO may have further requirements during Examination.	Noted

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Ref	MMO's Comment			Applicant's Response
	Construction monitoring	Condition 17	MMO requests that the following information is included within this condition: "(2) Subject to receipt from the undertaker of specific proposals pursuant to this condition the construction monitoring plan must include, in outline— (b) where piled foundations are to be employed, unless otherwise agreed by the MMO in writing, details of proposed monitoring of the noise generated by the installation of the first six piled foundations of each piled foundation type to be constructed collectively under this licence and the licence granted under Schedule 12 of the Order. (3) The results of the initial noise measurements monitored in accordance with sub-paragraph 17(2)(b) must be provided in writing to the MMO within six weeks of the installation (unless otherwise agreed in writing) of the first six piled foundations of each piled foundation type. The assessment of this report by the MMO will determine whether any further noise monitoring is required. If, in the opinion of the MMO in consultation with the statutory nature conservation body, the assessment shows impacts significantly in excess to those assessed in the environmental statement and there has been a failure of the mitigations set out in the marine mammal mitigation protocol, all piling activity must cease until an update to the marine mammal mitigation protocol and further monitoring requirements have been agreed. (4) The undertaker must carry out the surveys specified within the construction monitoring plan or plans in accordance with that plan or plans, including any further noise monitoring required in writing by the MMO under condition 17(3), unless otherwise agreed in writing."	It is proposed that monitoring should be undertaken in respect of the first four piles as provided in the in the offshore in-principle monitoring plan submitted as part of the application documents, and with which the construction phase monitoring plan is to accord (pursuant to conditions 11(1)(j) and 17 of Schedules 11 and 12 of the **draft DCO [PEPD-009]**.). No further monitoring is considered necessary based on the assessment of predicted effects.
	Timing of monitoring report	Condition 19	Update to include "agreed in writing"	This has been addressed in the **draft DCO [PEPD-009]**
	Updating of cable monitoring plan	Condition 20 "or as instructed by the MMO."	Update to "or as instructed in writing by the MMO."	This has been addressed in the **draft DCO [PEPD-009]**
	Piling	Condition 21(1) "Sensitive Features Mitigation Plan"	MMO recommends that this is not capitalised.	This has been addressed in the **draft DCO [PEPD-009]**

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Ref	MMO's Comment			Applicant's Response
	Piling	Condition 21	Please include the following condition: "In the event that driven or part-driven pile foundations are proposed to be used, the hammer energy used to drive or part-drive monopile foundations must not exceed 4,400kJ and the hammer energy used to drive or part-drive pin pile foundations must not exceed 2,500kJ.	Condition 11(1)(c) of Schedules 11 and 12 has been amended in the **draft DCO** **[PEPD-009]** to secure that all piling methods are specified and submitted for approval as part of the construction method statement. As the contents of this document must accord with the construction methods assessed in the environmental statement, which include piling, the submission and approval of this document will deal with the maximum hammer energies and ensure they do not exceed those assessed in the ES. Condition 12 requires that the authorised scheme is constructed in accordance with the approved documents. An additional condition to secure this limit is therefore unnecessary.
	Reporting of cable protection	Condition 22	Please change "Natural England" to "relevant Statutory Nature Conservation Body".	This has been addressed in the **draft DCO** **[PEPD-009]**
	Decommissioning	Condition 23 "(1) Prior to any decommissioning activities being undertaken the undertaker must submit and secure the written approval of the MMO for a decommissioning mammal protection protocol (Decommissioning MPP). (2) The Decommissioning MPP must be implemented as approved."	MMO requests clarity on the inclusion of this condition and whether decommissioning activities are included and if so, this should be made clear in the licensed activities.	The licence will remain in force for the life off the windfarm and this condition ensures that marine mammals will be protected during decommissioning activities which have been assessed in the environmental statement.
	Completion of construction	Condition 24	MMO requests the following is included in this condition: "25. The undertaker must submit a close out report to the MCA and the UK Hydrographic Office within three months of the date of completion of construction. The close out report must confirm the date of completion of construction and must include the following— (a) the final number of installed wind turbine generators; (b) a plan of the layout of installed wind turbine generators and offshore accommodation platform; and (c) latitude and longitude coordinates of the centre point of the location of each wind turbine generator and offshore accommodation platform, provided as Geographical Information System data referenced to WGS84 datum."	The condition has been amended in the **draft DCO** **[PEPD-009]**to include a requirement for a plan of the layout of installed wind turbine generators and offshore substations and the coordinates of these structures. There are no offshore accommodation platforms.

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Ref	MMO's Comment	Applicant's Response
4.1 General Comments		
MMO 4.1.1	MMO is aware that several major points raised during the Preliminary Environmental Information Report (PEIR) process have not been addressed sufficiently, and this poses a major issue. Please see points 4.6.6, 4.6.33, 4.6.35, 4.6.59 - 4.6.61, 4.7.9 and 4.7.10.	Please see responses to the points below.
MMO 4.1.2	MMO has focused its review on the following chapters of Volume 2 of the ES, however, has also reviewed the accompanying figures in Volume 1, and relevant appendices where required: • Explanatory Memorandum • Rampion 2 ES Volume 1 Non-technical summary • Chapter 1: Introduction. • Chapter 4: The Proposed Development. • Chapter 5: Approach to the EIA. • Chapter 6 Coastal Processes. • Chapter 8: Fish and shellfish ecology. • Chapter 9: Benthic, Subtidal and Intertidal ecology. • Chapter 10: Commercial fisheries. • Chapter 26 Water environment. • Chapter 30: Inter-related effects. • Volume 4, Appendix 11.3 Underwater noise assessment technical report. • Volume 4, Appendix 8.3 Underwater noise study for sea bream disturbance, • Revision A. • Rampion 2 Site Characterisation Report	The Applicant notes the comments on the listed ES chapters which are addressed below.

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Ref	MMO's Comment	Applicant's Response
MMO 4.1.3	The DCO Part 3.1 Schedule 1 Article 3 Part 1 authorised development Work No. 2, states that Rampion 2 must comprise no more than 90 wind turbine generators. Part 14 of the DCO 3(a) then states that *"Notwithstanding article 3(1) no more than 116 wind turbine generators and 1 offshore substation may be constructed. Also, in the ES Chapter 1 Introduction section 1.2.3 the overview of the proposed development suggests "up to 90 offshore wind turbine generators".* However, in the Non-Technical Summary -Volume 1 of the ES the project is described as being made up of as 116 wind turbine generators, before Chapter 4 (4.1.13) states that up to 90 wind turbine generators will be a key element, before it states in 4.1.17 that the area and number of WTG have been reduced from 116 to 90.The DCO and ES and different chapters in the ES should contain the same specifications for consistency and to ensure impacts are accurately described mitigated and monitored appropriately.	Article 7 within Part 2 Principal Powers of the **draft Development Consent Order [PEPD-009]** (page 14) deals with the interaction between the Proposed Development and the existing Rampion Wind Farm. The purpose of the article is to ensure that no further construction is undertaken at Rampion 1 beyond that currently in situ, being 116 wind turbine generators and 1 offshore substation. Article 7 amends the existing Rampion Offshore Wind Farm Order 2014 by replacing its existing Article 3 with the new wording set out in Article 7 of the **draft DCO [PEPD 009]**: The wording of Article 7 does not relate to the maximum turbines for Rampion 2. Section 1.2 of the **Non-Technical Summary [APP-041]** is referring to Rampion 1, which has 116 wind turbine generators installed and operating. The maximum number of wind turbines for Rampion 2, is 90, as stated in **Chapter 4: The Proposed Development, Volume 2 [APP-045] and the draft Development Consent Order [PEPD-009].**
4.2 Coastal Processes		
MMO 4.2.1	MMO considers that all potential impacts have been identified. However, specific comments about the assessment of significance have been set out below ES Volume 2 Chapter 4 – Table 4-3 – please advise if the WTG structure have sufficient bunding to contain the 29,819 litres of fluids?	Wind turbines are designed to avoid creating an environmental impact through a leakage of fluids from the turbine. Whilst there isn't bunding to account for all fluid loss the Nacelle canopy is designed in a way to contain leaks from each of the main systems. The amounts described represent the "most likely worst case" contained in the turbine as a whole and will be dependent on each individual turbine design. It does not necessarily mean this is the total amount that could theoretically leak at one time. In addition some of these same fluid types may be split between distinct systems. As part of the turbine design risk assessment the turbine manufactures will carry out assessment to ensure sufficient bunding is in place for foreseen failure scenarios. Most fluid levels are constantly measured and the turbine will react in a way to minimise leakage, for example turning off pumps, in some cases this will lead to complete shutdown of the turbine. The largest amounts of fluid are seen in the gearbox (on turbine types that have gearboxes) and glycol-based cooling fluid which is

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Ref	MMO's Comment	Applicant's Response
		used for both component cooling and in some cases for ballast in tower dampening. In the case of the gearbox oil any leaks will be contained in the nacelle canopy (which acts as bunding). In the case of glycol fluid the most likely scenario is that only part of the system is compromised and the that the fluid collects in the Nacelle canopy or tower bunding systems.
MMO 4.2.2	ES Volume 2 Chapter 4 – Table 4-3 – to note details from this table should be provided in the Outline Scour Protection and Cable Protection Plan when completed.	Details from **Table 4-3, Chapter 6: Coastal processes, Volume 2 [APP-047]** will be included in the final Scour Protection and Cable Protection Plan which is servured by condition 11(1)(i) of Schedules 11 and 12 of the **draft DCO [PEPD-009]**.
MMO 4.2.3	ES Volume 2 Chapter 4 Table 4-5 – please provide evidence to show that the sand wave clearance of 10 metres (m) will be sufficient to create and maintain a corridor for the plough or trenching device.	Maximum sandwave clearance trench dimension MDS has been informed by standard descriptions and protocols for this activity. The base of the trench will have a minimum fixed width that must be achieved to subsequently allow the cable burial tool to pass (which is the purpose of the levelling). Sloped sides to the cleared path will increase the apparent width in proportion to the local depth of sediment cleared (i.e. continuously varying from trough to crest of individual sandwaves). Allowance for this is made in the estimated total volume of sandwave clearance required, also informed by the detailed bathymetry of the project area and the realistic height and number of sandwaves that might be encountered. The estimated values are conservatively determined for the purpose of the EIA (not based on a specific route through specific features).
MMO 4.2.4	ES Volume 2 Chapter 4 section 4.3.31 – plastic fronds can introduce plastics into the marine environment as they degrade over time. If there is scope to minimise the use of plastic fronds and geotextile bags, this would be welcomed and should be set out within the Outline Scour Protection and Cable Protection Plan.	The Applicant is committed to minimising the release of plastics into the marine environment, and commits to using suitable alternatives, where this is practicable. C-288 has been added to the commitments register as and will be secured through the the next iteration of the **Outline Scour Protection and Cable Protection Plan [APP-234]** secured in Condition 11(1)(i) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**) at Deadline 3.

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MMO 4.2.5	ES Volume 2 Chapter 4 section 4.3.76 – the impacts of "ground-out" area has not been assessed especially in the near shore environment and should be included.	The beach and shallow intertidal and subtidal areas at the landfall comprise a mixture of sands and gravels. The temporary addition and subsequent removal of sand/gravel beds in the nearshore area is unlikely to change the composition or form or function of the sediments present following the construction phase, especially following a reasonable period of reworking (e.g. one large storm). In response to Issue Specific Hearing 1 agenda item 46, the Applicant has produced an assessment of temporary gravel beds: **Appendix 13 - Further Information for Action Point 45 and 46 (document reference 8.25.13)**.
MMO 4.2.6	ES Volume 2 Chapter 4 Table 4-17 – it is not clear if a "jetter" include the use of Continuous Flow Devices (CFD). These are very powerful devices and can move considerable volumes of sediment which should be assessed.	The Applicant can confirm, a jetter includes the use of Continuous Flow Devices (CFD).
MMO 4.2.7	ES Chapter 6 Coastal Processes (executive summary) –sand banks and the shoreline are "sensitive receptors" and any impacts on them need to be assessed.	The Applicant can confirm that the specifically identified coastal processes receptors are identified in **Table 6-6, Chapter 6: Coastal processes, Volume 2 [APP-047]**, which includes all named receptors identified within the study area for the following categories: nationally or internationally designated sites; local coastlines; regional coastlines; offshore sandbanks; and recreational surfing venues. Potential impacts on local and regional coastlines, and offshore sandbanks, are assessed in **Chapter 6: Coastal processes, Volume 2 [APP-047]**, with respect to: the tidal regime (**paragraph 6.10.1** onwards); the wave regime (**paragraph 6.10.11** onwards); and, the sedimentary regime (**paragraph 6.10.21** onwards). More detail of the basis for these assessments is contained in **Appendix 6.3: Coastal processes technical report Impact assessment, Volume 4 [APP-131], Sections 4, 3 and 5**, respectively.

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Ref	MMO's Comment	Applicant's Response
MMO 4.2.8	ES Volume 4 Appendix 6.3 Coastal Process Technical report – section 2.1.2 – clarity is sought if any dredge pits (for sourcing of materials) or borrow pits are proposed?	The Applicant can confirm that no dredge or borrow pits are required for the sourcing of material.
MMO 4.2.9	ES Volume 4 Appendix 6.3 Coastal Process Technical report – section 2.4.4– what lessons from Rampion 1 disposals can be applied to Rampion 2 if drill-drive operations are used?	Rampion 1 did not utilise drill-drive methods and therefore no information was taken from this specific project. The Applicant does not anticipate that drill-drive operations will be undertaken in areas where chalk arisings would occur.
MMO 4.2.10	ES Volume 4 Appendix 6.3 Coastal Process Technical report – section 2.4.6 – the equivalence in drill volumes and mound volumes is surprising as the 0.6 ratio (Soulsby, 1997) would imply an expanded volume to grains/particles overlapping etc. this should be explained.	The text being referred to (**paragraph 2.4.6** in **Appendix 6.3: Coastal processes technical report Impact assessment, Volume 4** **[APP-131]** is comparing the volume of a drilled hole (~347 m^3 based on the expected dimensions) for a monopile installation at Lynn and Inner Dowsing Wind Farm, to the approximate surveyed/measured volume of the resulting drill spoil mound that accumulated on the seabed (~290 m^3). The drill was into chalk and the majority of material in the drill spoil mound comprised relatively larger 'chunks'. The comment appears to question why the volume of the drill spoil mound is less than volume of the drilled hole, also noting that disaggregation of the highly compressed soil in the ground should result in a relatively larger volume of spoil following drilling. The logic of the question is fair and clear - however, simply, it is likely that some proportion of the drilled material did not accumulate in the drill spoil mound and was deposited in a more dispersed manner elsewhere nearby. Not all of the drilled and redeposited material is accounted for by the available survey data in this particular case (as also noted in the original text).
MMO 4.2.11	ES Volume 4 Appendix 6.3 Coastal Process Technical report – section 2.4.8 – MMO suggests that samples from Vibro corers etc are used to fully characterise the chalk substrate in order to validate the assumptions made in this ES (in terms of particle size, consolidate and settling velocity).	The Applicant confirms that geotechnical data will be collected pre-construction, and core samples will be analysed to characterise the seabed substrata to inform construction design decisions.

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MMO 4.2.12	ES Volume 4 Appendix 6.3 Coastal Process Technical report – section 2.5.19 MMO hoped to see diagrams of the Suspended Sediment Concentration (SSC) plume showing the concentrations orientations and depositions so that pathways to receptors could be established, please can these be provided.	A map showing the extent of SSC and sediment deposition effects from sediment plumes is provided in **Figure 6.3.4** together with the text in **Section 2.9 of Appendix 6.3: Coastal processes technical report Impact assessment, Volume 4** **[APP-131]**. A map showing tidal excursion ellipses (i.e. the spatial path that would be followed by a sediment plume released at any location in the study area) is provided in **Figure 6.3.3** of **Appendix 6.3: Coastal processes technical report Impact assessment, Volume 4** **[APP-131]**.
MMO 4.2.13	ES Volume 4 Appendix 6.3 Coastal Process Technical report – section 5.4.3 – no maps of the changes in terms of tidal currents due to the structures – either for Rampion 1 or cumulative with Rampion 2 (analogously to waves shown in Annex A of the document) have been included, MMO would expect to see this and would request these are added to the document.	A more detailed assessment of change to tidal conditions due to the proposed scheme layouts is provided in **Section 4 of Appendix 6.3: Coastal processes technical report Impact assessment, Volume 4** **[APP-131].** This information is summarised in **paragraph 6.10.1** onwards of **Chapter 6: Coastal processes, Volume 2** **[APP-047]**. The assessment (based on a review of modelling studies for other wind farms, including Rampion 1) concludes that analogous offshore wind farms consistently have no measurable array scale effect (<a few cm/s or <1 degree) on tidal current speed or direction. Narrow wake features (with relatively lower mean current speed and proportionally increased turbulence intensity) are likely to be present behind individual foundations, but the distance for recovery to near ambient conditions is in the order of tens to a few hundreds of metres and the wakes are unlikely to overlap. The Applicant considers that the assessment and conclusion is robust and clear in the form of the statements made. As the determined effect is negligible in magnitude and no new modelling has been undertaken to define a specific pattern to plot, no new map of potential impact has been created.
MMO 4.2.14	ES Volume 4 Appendix 6.3 Coastal Process Technical report – section 5.4.3 – no maps for changes in sediment transport have been provided, please can these be provided for full review.	The assessment of potential changes to the sediment transport regime is a logical conclusion based on the assessed very low magnitude of change to tidal currents and waves (for the Proposed Development alone, and for the Proposed Development in combination with Rampion 1).

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Ref	MMO's Comment	Applicant's Response
		The detailed assessments are provided in **Appendix 6.3: Coastal processes technical report Impact assessment, Volume 4 [APP-131]**. The summary assessment and conclusions of significance are provided in, **Chapter 6: Coastal processes, Volume 2 [APP-047]**. The Applicant considers that the assessment and conclusion is robust and clear in the form of the statements made. As the determined effect is negligible in magnitude and no new modelling has been undertaken to define a specific pattern to plot, no new map of potential impact has been created.
MMO 4.2.15	A number of embedded mitigation measures are presented in Table 9-16 and appear to be realisable. No additional specific licence conditions are required, however upon review of the Scour Protection and Cable Protection Plan further information may be required within the Plan.	The Applicant welcomes agreement from the MMO regarding the embedded mitigation measures. Responses to the MMO's points on the **Outline Scour Protection and Cable Protection Plan [APP-234]** are in section 5.2.
MMO 4.2.16	MMO notes that the outcomes of the ES report indicated that no significant coastal processes were predicted, and thus, no monitoring is formally required.	The Applicant welcomes the comment.
MMO 4.2.17	The quality of the data is high and informative in terms of Coastal processes. MMO requires further information above before being fully satisfied with the in relation to coastal processes.	The Applicant welcomes the comment. Please see responses to specific points raised in the sections above.
4.3 Benthic Ecology		
MMO 4.3.1	The baseline features of the region have been adequately characterised using a wide range of desk-based data sources (listed in Table 9-9) and, to augment this, both intertidal and subtidal targeted surveys have been conducted (listed in Table 9-10). These data sources have together been suitably used to characterise the benthic ecological baseline for the project which is appropriate.	The Applicant welcomes the MMO's confirmation that the Applicant has appropriately characterised the baseline environment.
MMO 4.3.2	Overall MMO considers all potential impacts to have been identified. However, below are some comments about the assessment of significance which require action.	The Applicant welcomes the MMO's confirmation that all impacts have been considered, and has responded to the detailed comments below.

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MMO 4.3.3	In Section 9.6.3.1, regarding valuable ecological receptors ("VERs") the report states *"only a very small proportion of marine habitats and species are afforded protection under the existing legislative or policy framework. Therefore, evaluation must also assess value according to the functional role of the habitat or species. For example, some features may not have a specific conservation value in themselves but may be functionally linked to a feature of high conservation value".* MMO fully supports this notion and was expecting to see references to a suite of species which are considered to have important functional presence such as key prey species for bottom feeding fish, key drivers of benthic-pelagic coupling and/or bioturbators which are likely to play an important role in the ability of the seabed to affect nutrient flux and/or carbon sequestration. However, in the relevant Table (Table 9-14) no such species are listed, only those of conservation interest are identified (which seems to contradict the statement given above in Section 9.6.3.1), the MMO requests that this is updated, or justification is provided as to why the prey species are not included.	The Applicant can confirm that all biotopes identified during the benthic characterisation were taken through to **Table 9-14** and consequently grouped by description of habitat where they are not a protected feature/species. This allows all biotopes to be highlighted through the VER process. The detail of each VER/biotope is then further discussed within the assessment **Section 9.9 – 9.11 Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]** which breaks down important species that characterise biotopes and have a functional role for that habitat, where this information is deemed valuable to the EIA process.
MMO 4.3.4	While the report follows the Marine Evidence based Sensitivity Assessment (MarESA) approach regarding the sensitivity of receptors (biotopes in this respect) to potential pressures resulting from the project, which is of course acceptable, the MMO has reservations regarding the "temporary increase in SSC and sediment deposition". In Table 9-22, a number of biotopes are listed to be "not sensitive" to heavy smothering with which the MMO is not in agreement with. For example, the biotope "sponges and anemones on circalittoral rock" is considered as not sensitive to heavy smothering 5-30 centimetre (cm) of sediment overburden. Given the sessility and feeding methods of these taxonomic groups (i.e., sponges and anemones), the MMO argues that they must be rather sensitive to this degree of sediment overburden, unless it can be demonstrated that this overburden for this project will be experienced for very short timeframes. If there is no supporting information that the sediment overburden for this (and other biotopes where sensitivity to heavy smothering is either "low" or "not sensitive") then the sensitivity ranking should be reconsidered.	The Applicant can confirm that the methodology for defining sensitivity follows the Marine Evidence based Sensitivity Assessment (MarESA), as detailed through the ETG process. In relation to the biotope Sponges and anemones on vertical circalittoral bedrock (A4.139), this biotope relates to vertical bedrock which would therefore avoid direct pressures from smothering due to its orientation in the water column. Throughout the assessment **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]**, additional information on sensitive fauna has been presented where further justification is deemed valuable.
MMO 4.3.5	On a similar note, MMO has noticed that the report combines increased SSC with smothering into a single pressure. MMO considers that these two pressures, and importantly the mechanism by which they affect benthic organisms, are rather different and they should be separated out as part of an impact assessment.	The Applicant has combined these pressures into one assessment, however the impact has been split out within each assessment, including for defining sensitivity following the Marine Evidence based Sensitivity Assessment (MarESA).
MMO 4.3.6	Section 9.4.9 states *"All likely significant effects identified will be considered at further stages of the assessment as more detail regarding the design becomes available and greater levels of baseline data are collected and analysed. No matters aspects are being scoped out at this stage".* MMO considers that this is a logical and precautionary approach at this time.	The Applicant welcomes the MMO's confirmation that this approach is suitable.
MMO 4.3.7	The Applicant has responded to comments raised during the Evidence Plan Process and PEIR regarding the use and reliance on predicted habitat maps (Table 9-6), by informing stakeholders that subsequently acquired site-specific survey data will be used and prioritised over predictive maps.	The Applicant welcomes this comment.

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Ref	MMO's Comment	Applicant's Response
MMO 4.3.8	The outcomes of the ES report indicated that no significance benthic ecological impacts were predicted and, thus, no monitoring is formally required. However, in line with Natural England advice, the applicant has committed to undertake monitoring of habitats/species of principal importance pursuant to section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Thus, the proposed monitoring approach to Sabellaria spinulosa reef and chalk habitat is presented in Table 4.3 of the report cited in 3.3.1 above. MMO considers this approach to be sensible.	The Applicant welcomes the MMO support of this approach.
MMO 4.3.9	MMO would welcome monitoring of the sedimentary benthic communities throughout the construction and operation to provide valuable data to fill a large gap in current understanding. While such monitoring is not a formal request, the MMO would consider its inclusion here as a benefit to the whole.	The Applicant does not agree that there is a large gap in understanding in relation to sedimentary benthic habitats/ communities. However, where the location and extent of priority habitats and species require monitoring to be able to apply the appropriate mitigation, this should be the focus to minimise impacts. As detailed within the **Offshore In Principle Monitoring Plan [APP-240]**, which is secured in Condition 11(1)(j) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**), pre-construction surveys will be undertaken to confirm presence and extent of primary marine features. The requirement for post-construction monitoring will be dependent on the findings of the pre-construction surveys.
4.4 Dredge, Disposal and Chemical Use		
MMO 4.4.1	The survey for Rampion 2 offshore export cable corridor and array areas was extended to provide adequate coverage to be able to provide characterisation for benthic ecology. Samples collected and analysed as part of this survey were to support the determination of impacts on benthos and not specifically for sediment quality for dredge and disposal. MMO provided advice on the PEIR that suggested 30 samples should be taken across the areas. Considering the coarse nature of most of the construction areas, which were dominated by sand (some stony reef and bedrock were also identified), with finer sediments closer to the nearshore cross the export cable area as would be expected, the limited samples collected for analysis is likely to be indicative of the site overall.	The Applicant welcomes the MMO support of the sediment sampling and analysis.
MMO 4.4.2	ES Volume 4 Appendix 9.3 section 3.2 sampling strategy - MMO notes that the applicant states in that the final sample stations were signed off by the MMO across the subtidal survey area (Figure 1) based on the rationale outlined in Section 3.1 and presented in Figure 3. In total eight samples were collected across the ES assessment boundary area which were analysed for particle size analysis (PSA) heavy trace metals (including arsenic) and seven for Polyaromatic Hydrocarbons (PAHs), total organic carbon and total organic matter.	This is noted by the Applicant.
MMO 4.4.3	MMO notes that the samples were collected for chemical analysis using a 0.1 square metre (m2) Day grab which is appropriate, however it is preferable for the samples for PSA to be from the same grab operation as the chemical analysis procedure. In this instance a mini-hamon grab sample was taken for separate PSA sample. PSA was analysed by Ocean Ecology who are an MMO-validated laboratory for this procedure.	As presented in **Section 4.2.1 of Appendix 9.3: Rampion 2 Offshore wind farm subtidal benthic characterisation survey report, Volume 4 [APP-137]**, the Applicant can confirm that a day grab was utilised for the collection of samples for subsequent chemical analysis and that a mini-hamon grab was used for sediment samples for PSA analysis. The reason that PSA samples are collected from a mini-hamon grab is because this grab is more successful in a range of habitat types, including coarse sediments.

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Ref	MMO's Comment	Applicant's Response
		The Day grab is only successful in fine/soft sediments and therefore would not be appropriate across the majority of the site.
MMO 4.4.4	ES Volume 4 Appendix 9.3 section 6.3.2 sampling strategy - If these sediments have been sieved to less than 63 microns and hydrofluoric acid used, the comparison to Centre for Environment, Fisheries and Aquaculture Science (Cefas) Action Levels in the text in Table 11 should be removed. However, depending on the methods used the comparison to Canadian threshold effects levels and OSPAR Background Assessment Concentrations (BAC) (OSPAR et al.2009) may conversely be inappropriate. Therefore, only where methods of extraction match those of the preparation of the metric it is being compared to OSPAR BACS, Canadian TELS, US Environmental Protection levels, Cefas Action Levels, etc) can the results actually be assessed.	The Applicant has provided detailed methods of preparation and extraction in Appendix VI of **Benthic - Subtidal benthic characterisation survey report appendices** **[Document Reference 8.34]** submitted at Deadline 1.. The Applicant welcomes this initial judgement and hopes to reach agreement on these matters following the MMO's review the Applicant's Deadline 1 submission. In addition, the Applicant has provided an assessment of the release of contaminants as a result of proposed dredging and disposal activities. This assessment is presented in the **Site Characterisation Report** **[APP-031]**.
MMO 4.4.5	It is of note that for the south coast of the UK dredge higher levels of Arsenic are naturally observed in sediments (Cefas report E5403 indicates for normalised sediments less than 63 microns that the regional background level for the Eastern Channel for Arsenic is proposed to be around 23 milligrams per kilograms (mg/kg) with levels of reference concentrations of 30 mg/kg and proposed levels of Chromium for background around 90 mg/kg where the OSAPR BAC is 80 mg/kg). Therefore Table 11 OSPAR BAC has a typo for Chromium as none of the sites fail this should be 80 mg/kg (if methods are comparable). The methods of preparation and extraction should be clarified.	The Applicant acknowledges this error and agrees that the OSPAR BAC should be 80 mg/l and therefore, that none of the sites failed. The Applicant has provided detailed methods of preparation and extraction in Appendix VI of **Benthic - Subtidal benthic characterisation survey report appendices** **[Document Reference 8.34]** submitted at Deadline 1. The Applicant confirms that the methods are comparable. The Applicant welcomes this initial judgement and hopes to reach agreement on these matters following the MMO's review of the Applicant's Deadline 1 submission.
MMO 4.4.6	Provided the methods of preparation and extraction are comparable MMO believes the levels observed do not pose a concern for release of contaminants in suspended sediments during dredging/relocation/disposal activities and will confirm upon review of the clarifications.	The Applicant has provided detailed methods of preparation and extraction in Appendix VI of **Benthic - Subtidal benthic characterisation survey report appendices** **[Document Reference 8.34]** submitted at Deadline 1. The Applicant welcomes this initial judgement and hopes to reach agreement on these matters following the MMO's review of the Applicant's Deadline 1 submission. In addition, the Application has provided an assessment of the release of contaminants as result

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Ref	MMO's Comment	Applicant's Response
		of proposed dredging and disposal activities. This assessment is presented in the **Site Characterisation Report [APP-031].**
MMO 4.4.7	ES Volume 4 Appendix 9.3, Table 12 - Results of samples analysed for PAHs were compared to OSPAR BACs Effects Range Lows (ERLs), International Sediment Quality Guidelines (ISQG), Threshold Effects Levels (TELs) and Probable Effects Levels (PELs), in the absence of agreed UK Action levels for PAHs. The levels of PAHs observed other than Phenanthrene and Pyrene at two stations were below the limit of detection.	This is noted by the Applicant.
MMO 4.4.8	Appendix 26.3 WFD compliance assessment (page 29) - It was noted that the Sussex coastal water body is currently failing with regards to mercury and its compounds, and Polybrominated diphenyl ether therefore it would have been preferable to see levels of these polybrominated flame retardants as well as metals and PAHs to provide confidence that the levels of contaminants likely to be released from the dredging and relocation is acceptable. However, given the coarseness of the material further offshore in the array area (sands and gravels) and the levels observed, the risk to the marine environment from the release of contamination appears to be low.	The Applicant agrees that the risk to the marine environment from the release of contaminants is low as presented in **Section 6** of the **Site Characterisation Report [APP-031].** The Applicant wishes to highlight, as per the Environment Agency's section 42 responses, that all coastal and transitional waterbodies are currently failing for chemistry based on the 2019 results. Further details are provided in **Table 2-1 of Appendix 26.3: Water Framework Directive compliance assessment, Volume 4 [APP-217]**. When the surveys were scoped, designed and undertaken, the Sussex coastal water body was not failing.
MMO 4.4.9	ES v2 chapter 9 Benthic, Subtidal and Intertidal Ecology – pathways for likely significant effects were identified on benthic subtidal and intertidal ecology receptors as a result of release of pollutants from the construction and decommissioning activities. This should be amended for the release of pollutants during construction, operation, maintenance, and decommissioning, to ensure that consideration of the impacts of the use and discharge of chemicals are adequately addressed. The release of accidental pollutants could also transpire during maintenance and operation as well as for construction and decommissioning therefore this statement in the non-technical summary and chapter 9 should be amended.	The Applicant can confirm that the accidental pollution events were not scoped into the assessment due to the feedback received during scoping. As detailed within **Table 9-5 of Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]** "*The Inspectorate agrees that, with the implementation of measures to limit any potential pollution incidents, any potential impacts on benthic subtidal and intertidal ecology are unlikely to result in significant effects and therefore further assessment is not required*". Therefore, accidental pollution events (construction, operation and maintenance and decommissioning) were not included within the assessment.
MMO 4.4.10	MMO notes the estimated deposits on the seabed as a result of disposal for the initial mounds are said to be in the order of tens of hundreds of metres in diameter and from 10s to a few metres in thickness, with potential overlap of consecutive disposal events on the seabed. Fine grained material is not anticipated to settle locally with measurable thickness.	This is noted by the Applicant.
MMO 4.4.11	Chapter 9 Benthic Subtidal and Intertidal Ecology. Figure 9.2 shows the location of Benthic survey samples tested for contaminants. The MMO has found no other reference to sampling to determine the quality of the material to be displaced to be able to determine sediment quality from the chapters provided, this should be made clear.	**Section 4** of the **Site Characterisation Report [APP-031]** provides a detailed characterisation report of the proposed disposal area and dredged material. Furthermore, this report provides sufficient information to aid the licencing of the proposed disposal activities and site. **Section 4** of the **Site Characterisation**

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Ref	MMO's Comment	Applicant's Response
		Report **[APP-031]** provides a detailed site characterisation in terms of the physical, biological and human environment. Section 5 of the Site Characterisation Report **[APP-031]** presents a detailed characterisation of the physical, biological and chemical characteristics of the material to be disposed of. These characterisations have then informed the assessment of potential adverse effects of disposing this material at the proposed disposal site (Section 6). Paragraph 7.1.3 concluded "*As the assessment has not identified any significant adverse effects on receptors for this proposed disposal activity*…". As stated in Section 5.3 of Appendix 9.3: Rampion 2 Offshore wind farm subtidal benthic characterisation survey report, Volume 4 **[APP-137]**, all organic matter, hydrocarbon and metals analysis was undertaken by SOCOTEC UK Limited. All other analysis of sediment samples was undertaken by Ocean Ecology Limited.
MMO 4.4.12	Previous advice from the MMO during the PEIR consultation commented that there was an absence of sufficient physical and chemical detail for the proposed dredge and disposal area and therefore it was not possible to say whether disposal activity was acceptable. There is now some chemical and physical data available, which appears to indicate that the release of contamination from the construction activity is likely to be low, although the provenance for chemical analysis requires confirmation to be confident of the results provided to support this assessment.	The Applicant refers the MMO to its response to **4.4.11** above.
MMO 4.4.13	Whilst coarse sediments may not be appropriate for chemical analysis over the likely disposal area (most likely across the array area) from the characterisation figures 9 and 10 (Appendix 9.2) the MMO recommends not disposing of chalk arising from the export cable area to the array area and relocation of material other than side casting for such sediments should be further justified to ensure that impacts on sensitive receptors is minimised. The MMO welcomes discussions on how this can be captured as part of the consent.	The Applicant confirms that material arising from installation works will not be relocated to other areas of the Order limits. The Applicant will engage with the MMO to establish whether a Condition to this effect is required within the dMLs and, if so, to develop an agreed form of words for such.
MMO 4.4.14	ES chapter 6 appendix Table2-6 -MMO has previously raised concerns that there was a lack of explanation as to how "drilling protocols" would limit the deposits of arisings over a thickness over 4-5m thick. The Applicant's response was such that the sediment volume would be managed through either selective placement or redistribution of sediments after, as part of the construction method statement a foundation installation methodology including a dredging protocol, drilling methods and disposals of drill arisings and material extracted (C-279) (chapter 6). MMO is now content with these comments provided that these documents show adequate justification of how this limit will be achieved. MMO would welcome a draft drilling protocol at this stage or specific reference to these documents within the DML.	The Applicant welcomes this confirmation from the MMO and refers to Commitment C-279, which relates to the provision of a construction method statement secured through Condition 11(1)c of the dMLs (Schedules 11 and 12 of the draft DCO **[PEPD-009]**). This Condition states that the CMS must accord with the construction methods assessed in the ES and references inclusion of drilling methods and the disposal of drill arisings.
MMO 4.4.15	The installation of the cables will require ploughing, trenching or jetting or a combination of any such techniques. ES V1 section 3.2 states that some form of seabed preparation and the addition of any required cable protection may be required. The need for cable	The Applicant will provide the details of the type of protection material proposed to be deployed within the

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Ref	MMO's Comment	Applicant's Response
	protection for inter-array and export cables may be site- specific and require different methods however this statement suggests that any protection will be used. This sentence could be better worded to show that the regulator will have the opportunity for considered approval of the options and locations to ensure that impacts on protected features is minimised using best available practice and techniques. The MMO notes this could be covered within the outline scour protection and cable protection plan.	scour protection and cable protection plan, which details the need, type, sources, quantity and installation methods for scour protection, which must be updated and resubmitted for approval if changes to it are proposed following cable laying operations. An **Outline Scour Protection and Cable Protection Plan [APP-234]** has been submitted alongside the Application, with the final Plan submitted to and approved in writing by the MMO as secured in Condition 11(1)(i) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**).
MMO 4.4.16	Options for scour protection (Section 4.3.31 of the ES) included gabion baskets and nets, it should be noted that this will result in the potential introduction of plastic particles and cement to the marine environment, and MMO would support efforts to minimise where possible and recommend the type of protection to be used including impact from plastics is provided. Please see comments in Section 5.2 of this document of how this can be managed.	The Applicant is committed to minimising the release of plastics into the marine environment, and commits to using suitable alternatives, where this is practicable. C-288 has been added to the commitments register as and will be secured through the the next iteration of the **Outline Scour Protection and Cable Protection Plan [APP-234]** secured in Condition 11(1)(i) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**) at Deadline 3.
MMO 4.4.17	Please note, at decommissioning, where excavation of piles and or suction buckets is needed to be undertaken prior to cutting and or removal, an evaluation of the contamination and potential from release of chemicals from this activity will be recommended to be included as a licence condition (Chapter 4 4.9.7, 4.9.8 of the ES). This is to minimise the potential of the release of chemicals into the marine environment as a result of chemical use on the structures over the lifetime of the project. Once clarity is provided on decommissioning activities within the deemed marine licence the MMO may have further comments.	The Applicant notes the comments made with regards to the need to provide for evaluation of the potential for release of contaminants during decommissioning works, however at this stage it is too early for the Applicant to specify methodologies for decommissioning. The Energy Act (2004) requires that a decommissioning plan must be submitted to and approved by the relevant Secretary of State, a draft of which will be submitted prior to the construction of the Proposed Development. The decommissioning plan and programme will be updated during the Proposed Development's lifespan. To take account of changing best practice and new technologies, the approach and methodologies employed at decommissioning will be compliant with the legislation and policy requirements at the time of decommissioning. In accordance with the requirements provided in the **draft DCO [PEPD-009]**, a written decommissioning programme will be provided prior to works commencing.
MMO 4.4.18	ES Volume 2 Section 3.2 Explanatory Memorandum states that two types of foundation are provided for the WTG, however this omits the use of suction buckets and therefore should be amended for consistency.	The Applicant will ensure clarity is provided within the **Explanatory Memorandum [APP-020]** to ensure both pin-piles and suction buckets are included for the

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Ref	MMO's Comment	Applicant's Response
		multileg foundation option. The Applicant will provide an updated Explanatory Memorandum at Deadline 2.
MMO 4.4.19	Chapter 4 section 4.8.12 references touch up and full paint jobs for the WTG and Substation(s). MMO requires the volume and quantity as well as the frequency of use as well as how they are applied, and function to be fully described. Although chemicals used in 'closed systems' (within gears etc.) do not require notification to the regulator to support signatory obligations under OSPAR, where there is a requirement for top up of potential for release to the marine environment the quantities and characteristics of these chemicals should be included in the notification to the regulator for approval. Please see comments on this condition in Table 1	The Applicant notes that the relevant operations and maintenance activities are set out within the **Outline Offshore Operations and Maintenance Plan [APP-238]**. As detailed in response to MMO 3.5.3 above, this Plan will be referenced in the **draft DCO [PEPD-009]** and included in Schedule 16, which will be updated at the next revision to the draft DCO at Deadline 3. The OOMP will also be updated at this stage to clarify the condition of the deemed Marine Licences pursuant to which the final document is to be submitted. The use of approved chemicals for the Proposed Development and control over any coatings or treatments used to ensure these are suitable for use in the marine environment are secured in Condition 9(1) and 9(2), respectively, of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**.
MMO 4.4.20	Table 6-11 (Chapter 6, Coastal Processes) describes the potential for chemicals (bentonite) to be expelled or lost to the marine environment as part of the Horizontal Directional Dredging (HDD). An estimate of the risk to the marine environment should be provided to the MMO for any chemical used and discharged either intentionally or potentially accidentally as per OSPAR guidelines (2008-3) unless used within a closed system, on vessels, grey water etc. (e.g., falls within other regulations). Please refer to 4.4.21 for further information.	The Applicant notes this comment and refers the MMO to its response to 4.4.21 below.
MMO 4.4.21	Table 4-4 (Chapter 9, Benthic subtidal and intertidal ecology) discusses the release of Bentonite as a non-toxic inert natural clay mineral on the list of notified chemicals for use and discharge into the marine environment. This statement is incorrect as this is not a list of 'approved' chemicals. This is a list of products where their contents have been hazard assessed and ranked using generic modelling parameters for oil and gas platforms that are not appropriate for use for offshore wind farms.	The Applicant notes that Bentonite is listed as posing little or no risk (PLONOR) into the marine environment, as referred to by the MMO in its Relevant Representation MMO 4,4,22 below, but acknowledges this is not strictly a list of 'approved' chemicals. The Applicant would highlight that it has assessed the fate of bentonite and potential direct and indirect impacts of its release into the marine environment in the following documents: **Chapter 6: Coastal processes, Volume 2 [APP-047]**; **Appendix 6.3: Coastal processes technical report impact assessment, Volume 4 [APP-131]**; **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]**; and **Appendix 26.3: Water Framework Directive compliance assessment, Volume 4 [APP-217]**.

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MMO 4.4.22	Risk assessment at a site-specific level is undertaken when operators apply to use and discharge these chemicals providing adequate environmental justification to their regulator. Whilst Bentonite is listed as posing little or no risk (PLONOR) into the marine environment, this chemical would still require notification and approval for use by the MMO on offshore wind farms depending on quantities frequency and location as a minimum. Other chemicals added like dyes, cement, additives etc. would also require individual notification.	The Applicant refers to its response to MMO 4.4.21 above.
MMO 4.4.23	The notification for approval should include methodological information including chemical type, methodology for its use, quantity, and frequency of use. A further "Chemical Risk Assessment" should be provided for any chemical with a "pathway to the marine environment", this includes chemicals used in both open systems and closed systems where "top-up" is required. A Chemical Risk Assessment should include information on the toxicity, persistence, and biodegradability of the chemical (please note that further information may be requested following the review of this Assessment). For chemicals used in closed systems without the need for "top-up" only the methodology information is required. Following a review of the information and/or in consultation with Cefas, the MMO will make a decision on its use. This will be done through condition 9(1) and the MMO is currently reviewing this condition wording.	The Applicant notes this comment and refers to its response to the MMO's comment in relation to Condition 9(1) (Table 1 MMO above) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**).
MMO 4.4.24	Alternative use: Consideration is given (section 3) for alternative use including beneficial placement and relocation, and no viable uses were thought possible which is understandable given the constraints regarding the nature of the material and potential uses available in the area at this time.	The Applicant welcomes this confirmation from the MMO.
MMO 4.4.25	The potential use of seven open disposal sites included that of Rampion 1 is also provided (3.3). MMO acknowledge that none of the open sites were considered of use as they were designated with respect to the site-specific applications. The applicant should note that this is not always true, and once designated they may be of use to other applicants, provided adequate characterisation for the site is undertaken considering the proposed activity. However, given the volume and the location and nature of these works, MMO agrees that these sites would likely be unsuitable.	The Applicant welcomes this confirmation from the MMO.
MMO 4.4.26	Physical and Chemical Contamination: MMO has been unable to find the name of the laboratory undertaking the analysis for trace heavy metals and PAHs in the reports and therefore have major concerns in the confidence of the levels indicated. The levels of hydrocarbons are said to be below the limit of detection (LOD), however the reported LOD value (1mg/kg) appears to be higher than would usually be expected from an MMO-validated laboratory. In addition, the table appears to state that all the determinands have an Action Level 1 (AL1) of 100 mg/kg, this is incorrect. This AL1 is for the total hydrocarbons analysis only (fluorescence method) and not individual determinands (MMO 2015). Therefore, additional information is required regarding the methods of extraction for sample analysis to be appropriately compared to action levels cited.	As stated in **Section 5.3 of Appendix 9.3: Rampion 2 Offshore wind farm subtidal benthic characterisation survey report, Volume 4** **[APP-137]**, all organic matter, hydrocarbon and metals analysis was undertaken by SOCOTEC UK Limited. All other analysis of sediment samples was undertaken by Ocean Ecology Limited. The Applicant has provided detailed methods of preparation and extraction in Appendix VI of **Benthic - Subtidal benthic characterisation survey report appendices** **[Document Reference 8.34]** submitted at Deadline 1. The Applicant welcomes this initial judgement and hopes to reach agreement on these matters following the MMO's review of the Applicant's Deadline 1 submission. The Applicant can confirm that the LOD used for PAHs was 1 µm/g and 1 mg/kg was stated in error. This is confirmed by **Appendix XI** **of** **Benthic - Subtidal benthic characterisation survey report appendices** **[Document Reference 8.34]** submitted at Deadline 1. As confirmed in **Section 6.3.1 of Appendix 9.3: Rampion 2 Offshore wind farm**

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		subtidal benthic characterisation survey report, Volume 4 [APP-137], "*With the exception of Phenanthrene (1.39 µg kg^{-1} at ST020) and Pyrene (1.09 µg kg^{-1} at ST030), all PAHs were recorded below limits of detection across all 7 sampling stations (**Table 12**). At the two stations where PAHs were detected, reference levels were not exceeded (**Table 12**).*" Therefore, the Applicant can confirm that there are no exceedances of CAL for any of the PAHs analysed. Full details of the PAH results are provided in **Appendix XI of Benthic - Subtidal benthic characterisation survey report appendices [Document Reference 8.34]** submitted at Deadline 1.
MMO 4.4.27	Each of the four cables may require excavation at the punch outside (30m long x 4m wide x 2m deep) between 800 and 1,500m offshore at 2.5m LAT. These pits are anticipated to be in use for up to four months with the resulting volume excavated 720 metres cubed (m³)) potentially stored at the array (section 6.9.61) as well as material trenched from trenches or in the export cable area. If this material was to comprise chalk, they might cause mounds on the seabed. The impact of chalk rather than silt sand and gravel must also be considered as part of the discussion in the impact assessment, as chalk can have a toothpaste like consistency. This should be considered within the ES and the document should be updated.	The potential impact of excavating HDD exit pits is described and assessed in **paragraph 6.9.61** onwards in **Chapter 6: Coastal processes, Volume 2 [APP-047]**. The assessment mainly addresses the potential impact of the pit depression on local waves and currents (and therefore on local beach processes and morphology) and also as a sediment trap. It is noted that the excavated material would be temporarily stored 'in the array area or export cable corridor' and recovered to provide backfill for the HDD exit pits as part of finishing the cable installation. The material nature of the excavated spoil (other than its overall volume and typical clast size) is not relevant to the assessment of the physical processes impacts described above. It is noted that the underlying chalk is exposed extensively along this coastline, and that loose chalk boulders (and likely smaller pieces) are commonly observed on the beach and seabed. The introduction of an additional relatively small volume of chalk clasts (especially following a reasonably short period of reworking, e.g. one large storm) would not noticeably change the seabed in this area.
4.5 Shellfish Ecology		
MMO 4.5.1	MMO considers the potential impacts on shellfisheries and shellfish receptors to have been accurately identified and no receptors have been scoped out. The appropriate evidence has been proposed for the assessments and the Applicant has made use of several relevant data sources. The MMO agrees that no species- specific surveys need to be conducted to characterise the baseline environment for shellfisheries and shellfish receptors.	This confirmation from the MMO is welcomed by the Applicant.

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Ref	MMO's Comment	Applicant's Response
MMO 4.5.2	Additionally, there is an adequate description of the potential cumulative and inter-related impacts and effect on the physical and biological environment in relation shellfish and shellfisheries receptors.	This confirmation from the MMO is welcomed by the Applicant
MMO 4.5.3	In table 8-7 Receptors requiring assessment for fish and shellfish ecology (Chapter 8, p50), cuttlefish (Sepia officinalis) is put under the mobile fish species. The MMO recommends including cuttlefish under shellfish rather than mobile fish species.	This advice is noted by the Applicant. The Applicant is confident that a suitably precautionary assessment has been undertaken on cuttlefish (*Sepia officinalis*) and highlights that this species has been considered, where relevant, as a stationary receptor due to its demersal spawning behaviours, for example as set out in Paragraph 8.9.87 of **Chapter 8: Fish and shellfish ecology, Volume 2** **[APP-049]**.
4.6 Fisheries and Fish Ecology		
MMO 4.6.1	A number of comments and concerns raised by the MMO have not been addressed within the ES. Additionally, it appears that a number of concerns and recommendations made subsequently have not been taken forward by the Applicant. The MMO is very disappointed in this approach as further information and discussions will be required within the Examination period. The MMO notes that pre- application should be used to minimise the engagement within the Examination period and as the information requested has not been provided at this stage, this will cause more resource to be utilised during the short period of Examination. The MMO urges the Examining Authority to request the required information at the earliest opportunity to allow all evidence to be assessed and discussions to take place, to enable a robust decision to be made on fish ecology.	These concerns are acknowledged by the Applicant; these are responded to individually in the below responses
MMO 4.6.2	During the pre-application stage the MMO has raised major concerns regarding: • the likelihood of significant impacts to black seabream during the construction, operation and maintenance; • the disturbance of black seabream from sedimentation and noise generated during export cable laying activities and the mitigation and surveys required; • to disturbance of black seabream from underwater noise (UWN) as a result of piling, concerns and uncertainty around the modelling behavioural effects; and • impacts to herring from UWN including modelling	These concerns are acknowledged by the Applicant, these are responded to individually below.
MMO 4.6.3	Comments have been set out below, if anything requires further clarification the MMO recommends specific questions being asked as part of the Examination.	This is noted by the Applicant.
MMO 4.6.4	The MMO is still reviewing the cumulative impacts assessment and will provide further comments in due course.	This is noted by the Applicant.
MMO 4.6.5	MMO notes a project description has been provided within Chapter 4 of the ES, a detailed description of each element of the marine works, and a construction programme has been provided for the construction phase of the works. In Table 8.12 of Chapter 8, the Applicant has presented the maximum design scenario (MDS) relating to each project phase activity and the potential impacts to fish associated with each activity have been identified. MMO is content the MDS presented is consistent with the parameters outlined in the project description.	This is welcomed by the Applicant.

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Ref	MMO's Comment	Applicant's Response
MMO 4.6.6	There are discrepancies between the maximum duration of piling per day stated in the UWN Impact Assessment and throughout Chapter 8. In Chapter 8, the maximum duration to install a monopile is stated as 4 hours. However, in Appendix 11.3 (the Underwater Noise Impact Assessment), the worst-case duration for monopile and jacket foundation installation is stated as 4.5 hours. It is also noted in Section 3.3.8 that *"In a 24-hour period it is expected that either a maximum of two monopile foundations or four jacket foundations can be installed. This is included as part of the modelling assuming that the foundations are installed consecutively. This increases the overall upper limit of piling durations in a 24-hour period for monopile foundations to 9 hours and 5 hours 50 minutes for worst-case and most likely scenarios, respectively. For jacket foundations this is 18 hours and 11 hours 40 minutes for worst-case and most likely scenarios, respectively".* This was also raised in advice provided during PEIR, and the MMO requests clarity as to why this has not been amended.	This inconsistency is acknowledged by the Applicant, and was amended in the Errata submitted to the Planning Inspectorate at procedural deadline of 16th January 2024.
MMO 4.6.7	The Applicant has defined the fish and shellfish ecology study area as a 16km zone of influence encompassing the proposed DCO Order Limits, this has been determined from the full potential maximum sediment plume excursion distance during spring tides. The MMO considers this to be a very small study area in relation to the size and scale of the project, particularly when accounting for the mobility of fish receptors. The Rampion 2 study area is also small in comparison to other Offshore Wind Farm (OWF) projects of a similar scale, size and significance where the respective study areas have been defined as the surrounding wider region, rather than limited to the area influenced by the anticipated sediment plume excursion. The MMO notes that for impacts of UWN, the area of search has been increased to 100km, which is appropriate, given the greater area of effect of UWN.	As set out in Paragraph 8.4.3 of **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]**, excluding underwater noise, the Study Area for fish and shellfish ecology was defined by the potential zone of impact arising from construction, operation and maintenance, and decommissioning activities of the Proposed Development and was informed by the maximum tidal excursion extent and the likely extent of potential sediment plume impacts described in **Chapter 6: Coastal processes, Volume 2 of the ES [APP-047]**. The Study Area therefore encompasses all direct and indirect (secondary) impacts arising from the Proposed Development. The Applicant also highlights that as detailed in **Table 8-26** and summarised in **paragraph 8.9.392** of **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049],** the coastal processes modelling confirmed the zone of measurable SSC and sediment deposition is anticipated to be localised to the locations of works (<500 m from the source). From 500 m to the maximum tidal excursion (16 km on a spring tide) lesser but measurable SSC increase is anticipated, and no measurable thickness of deposition is predicted. Therefore, the 16 km study area defined is considered suitably precautionary, considering the largely localised nature of increased SSC and sediment deposition. I line with the source-pathway-receptor model for impact assessment, the study area in regard to underwater noise was extended to ensure this encompassed all relevant receptors for which an impact could potentially arise, extending to a 100km radius from the Proposed Development. The Applicant welcomes the MMOs approval of the underwater noise study area.

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Ref	MMO's Comment	Applicant's Response
MMO 4.6.8	The spawning and nursery grounds of multiple commercially important fish species, and species of significant conservation importance are detailed within Section 8.6 of Chapter 8, and figures indicating the presence of spawning and nursery grounds (as per Coull et al., (1998) and Ellis et al., (2012)) have also been provided in the volume of figures for Chapter 8. As far as the MMO can reasonably determine, these have been accurately reported. For ease of interpretation, given the volume of information provided, it would be useful to have a table presented alongside this text, which presents a list of species as per Ellis et al., (2012), and indicates via tick boxes whether the spawning and/or nursery grounds of each species overlaps with the Fish and Shellfish Ecology Study Area.	This advice is noted by the Applicant. The Applicant is confident that spawning and nursery grounds of multiple commercially important fish species, and species of significant conservation importance have been accurately reported, as acknowledged by the MMO.
MMO 4.6.9	The Applicant has completed a herring potential spawning habitat and Sandeel potential habitat suitability assessment. Site-specific sediment grab samples have been collected from within and around the array, with PSA of samples used to classify sediment composition as 'preferred', 'marginal' or 'unsuitable' for herring spawning and sandeel habitat, according to the methodologies described in Reach et al., (2013) and Latto et al., (2013) respectively.	This is noted by the Applicant.
MMO 4.6.10	Whilst this is appropriate, the Applicant has not followed the recommended MarineSpace (2013a) and (2013b) methodologies for herring and sandeel, respectively. These methods use a suite of data including PSA data, British Geological Survey (BGS) data, Regional Seabed Monitoring Plan (RSMP) data, herring larval survey data (for herring assessments), as well as fishing fleet data and scientific publications, to determine potential herring spawning habitat and potential sandeel habitat. This data is methodically layered to generate a single 'heatmap' output. Simply put, areas of higher 'heat' are representative of areas with higher potential herring spawning habitat, or potential sandeel habitat, respectively. Areas of 'heat' are assigned a score based on confidence of the data. The MarineSpace methods were developed in consultation with Cefas and are considered appropriate for use for other offshore activities and have been widely used in EIAs for OWF.	This is noted by the Applicant. A habitat suitability assessment following the MarineSpace (2013a) and (2013b) methodologies for herring and sandeel as recommended by the MMO has been undertaken and is provided in **Appendix 9 - Further Information for Action Points 38 and 39 (document reference 8.25.9)** at Deadline 1.
MMO 4.6.11	The MMO requests that the Applicant revises their habitat suitability assessments by following the MarineSpace (2013a and 2013b) methods and provides 'heat' maps of herring potential spawning habitat, and sandeel potential habitat, for the fish ecology study area as an addendum to the ES.	Please refer to the Applicant's response to ref 4.6.10.
MMO 4.6.12	Further to the above, both habitat suitability assessments presented within Volume 3, Chapter 8 (Fish and Shellfish Ecology Chapter Figures 8.9 and 8.10), use UK Sea Map 2021 seabed data to characterise seabed habitats inside the project boundary and across the wider study area. The UK Sea Map 2021 seabed data presents sediments classified as 'hard substrata, coarse substate, sand, mixed sediment and undefined' seabed types. These categories are far too broad and do not present the necessary resolution for identifying sediments which are preferentially selected by herring and sandeel.	This is acknowledged by the Applicant. Revised Figures, as recommended by the MMO have been provided in **Chapter 8: Fish and Shellfish, Volume 3 of the ES – Figures (document reference 6.3.8)** at Deadline 1. The broadscale seabed sediment data presented within the revised figures has been sourced from EMODnet seabed sediment data.
MMO 4.6.13	In the methodologies of Reach et al., (2013) and Latto et al., (2013), habitat suitability is determined according to sediment type as classified according to the Folk Sediment classification units (Folk, 1954). For herring, 'preferred' potential spawning habitats are those classified as gravel and sandy gravel sediments, and 'marginal' potential spawning habitats are those classified as gravelly sand, as per Reach et al., (2013). Potential sandeel habitats are classified similarly, into 'preferred' (gravelly sand, slightly gravelly sand and sand sediments) and 'marginal' (sandy gravel) habitats as per Latto et al., (2013) based on Folk (1954). The broadscale UK Sea Map habitat data presented in Figures 8.9 and 8.10 do not align with the methodologies of Reach et al., (2013) and Latto et al., (2013) which makes the habitat suitability assessments presented difficult to interpret, with much of the nuance of determining areas of higher or lower suitability being lost.	Please refer to the Applicant's response to ref 4.6.12.

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Ref	MMO's Comment	Applicant's Response
MMO 4.6.14	The Applicant should redo their habitat suitability assessments following the methodologies of MarineSpace (2013a) and (2013b) for herring and sandeel respectively. Broadscale seabed sediment data should be sourced from either the BGS 1:250,000 scale seabed sediment maps, or EMODnet seabed sediment data, both of which are underpinned by the Folk Sediment classification scheme (Folk, 1954). Ideally, PSA samples overlain onto the broadscale sediment map should also be classified according to Folk, (1954) for increased compatibility with the broadscale sediment map.	Please refer to the Applicant's response to ref 4.6.10.
MMO 4.6.15	In comparing the symbology of Figures 8.9 and 8.10 in Chapter 8 of the ES, it is not clear why the UK Sea Map data is presented differently in each figure. The legend indicates that the colours selected for the categories of substrate is the same for both plots, however in Figure 8.9 (sandeel), seabed habitats surrounding and to the south of the Rampion array are predominantly 'coarse substrates' (pink), whereas in Figure 8.10 (herring), the same area of seabed habitat is classified as 'hard substrata' (grey). The MMO recommends that the Applicant addresses this inconsistency.	The Applicant acknowledges this inconsistency between **Figures 8.9 and 8.10** of **Chapter 8: Fish and Shellfish – Figures, Volume 3** **[APP-081]**. Revised Figures, as recommended by the MMO have been provided in **Chapter 8: Fish and Shellfish, Volume 3 of the ES – Figures** **(document reference 6.3.8)** ,at Deadline 1, with the inconsistencies amended. The Applicant also notes, that to address recommendations made in ref 4.6.14, the broadscale seabed sediment data has been sourced from EMODnet seabed sediment data.
MMO 4.6.16	Herring are reliant on specific seabed substrates in order to undertake spawning, and therefore do not have the ability to spawn successfully in unsuitable habitats when gravel is unavailable. In relation to their herring habitat suitability assessment, the Applicant concludes that "whilst preferred habitat is illustrated in Figure 8.10, there is no evidence of herring spawning in the area". At present, this conclusion is not supported by the Applicant's herring habitat suitability assessment (within Chapter 8).	The Applicant confirms that the conclusion provided in **paragraph 8.6.33** of **Chapter 8: Fish and shellfish ecology, Volume 2** **[APP-049]**, relates to the presence of prime/preferred sediments (as classified in accordance with the Reach et al., 2013 classifications) within the western portion of the array area and the offshore extent of the ECC. This statement is supported by the expanse of coarse sediments across the study area as informed by the UKSeaMap (2021) broadscale marine habitat data. As evidenced by the IHLS data, presented in **Figure 8.8** of **Chapter 8: Fish and Shellfish – Figures, Volume 3** **[App-081]**, there is no active herring spawning occurring in the area, with high intensity herring spawning activity occurring offshore of the Proposed Development array area, in the centre of the English Channel. As such, the Applicant is confident in the conclusions made based on the herring habitat suitability assessment as detailed in **Chapter 8: Fish and shellfish ecology, Volume 2** **[APP-049]**.
MMO 4.6.17	Whilst the MMO recognises that the highest intensity herring spawning occurs over grounds located more towards the centre of the English Channel than the array (as shown in Figure 8.8), Figure 8.10 clearly indicates that sediments within and surrounding the Rampion array are a mixture of "prime, sub-prime and suitable" potential spawning habitat, and therefore have sufficient composition to support herring spawning. In addition to this, Figure 8.8 shows herring larval densities amalgamated into a 'heat' map for the years 2007 – 2020, the map indicates that herring larval abundance within and surrounding the Rampion 2 array falls between 0.1 – 2,500 larvae per m2. Supplementary figures are presented in Appendix 8.1 Herring Annual Heatmaps, to illustrate the interannual variability in herring larval density across the Downs herring spawning grounds. These figures show a scale of larval abundance per m2 from 0.1 –	Please refer to the Applicant's response to ref 4.6.36.

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	750. Both figures represent an incredibly large range for the lowest larval abundances, and this does not seem to support the Applicant's conclusion considering that 2,500, or 750, larvae per m2 still represents a significant larval density, particularly at a more localised scale. In order to evidence their assertion that there is no evidence of herring spawning in the vicinity of the array, the Applicant should produce a heatmap following the methodology of MarineSpace (2013a), as outlined in points 4.6.10 and 4.6.11.	
MMO 4.6.18	Short snouted seahorse has been appropriately identified as a sensitive feature of the Beachy Head East and West Marine Conservation Zone (MCZ) and of the Selsey Bill and the Hounds MCZ. Seahorses are generally slow moving and are categorised as having high hearing sensitivity according to the Popper et al., (2014) criteria. Figures 8.22 and 8.23 indicate the likely range of impact from UWN from both sequential and simultaneous monopiling in relation to these MCZs, however it has been recognised by the Applicant that the species may spend periods of the year outside of MCZ site boundaries and potentially in the vicinity of Rampion 2. Within the In Principle Sensitive Features Mitigation Plan, the Applicant has recognised this and considered that there is potential for UWN from impact piling to propagate out towards the MCZs. The MMO welcomes this and defers to natural England as the Statutory Nature Conservation Body (SNCB) in relation to the MCZ assessment.	This is welcomed by the Applicant.
MMO 4.6.19	Black seabream have been included in the assessment as a species of concern which is appropriate. The presence and density of nest sites have been characterised throughout Chapter 8, and the sources used appear to be largely appropriate for this purpose. Monitoring data from marine aggregate dredging sites (2002-2020) have also been included to indicate the location and relative density of black seabream nests across the years of data. Whilst nests appear to occur in the same approximate locations, within the Kingmere MCZ and within a discrete area of the export cable corridor (ECC), each year, the Applicant should note there is usually some interannual variability in the density and position of nesting sites between years (Figures 8.14a and 14b). The Applicant has also noted a relative increase in nest density in data collected during surveys undertaken for marine aggregates Areas 453 and 488 from 2017 onwards.	The Applicant notes the comments from the MMO
MMO 4.6.20	MMO highlights the limitations of the aggregate monitoring data. To the best of our knowledge, to date, there have been inconsistencies in the timing of the post-June aggregate monitoring surveys. The 2017 surveys were undertaken on the 31 May and 7 & 25 August. Thereafter, the surveys undertaken in 2018, 2019 and 2020 were completed between May and July, thus making comparisons between the 2017 data and the July 2018-2020 data is not appropriate. This should be discussed within he documents	The limitations of the aggregates monitoring data have been acknowledged in **paragraph 8.5.12** of **Chapter 8: Fish and shellfish ecology, Volume 2** **[APP-049]**. The Applicant confirms that in acknowledging these limitations, an assessment has been undertaken with the assumption of the presence of black seabream within the proposed DCO Order Limits. As stated in **paragraph 8.5.12** of **Chapter 8: Fish and shellfish ecology, Volume 2** **[APP-049]**, post consent surveys, undertaken as part of a suite of pre-construction surveys, will allow a determination to made as to the extent of the nesting area, and specifically the key nesting areas within the DCO Order Limits as detailed within the **Offshore In Principle Monitoring Plan** **[APP-240]**, which is secured in Condition 11(1)(j) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**), To ensure that the conservation objectives of the Kingmere MCZ are not hindered and that there are no population level effects on black seabream, the Applicant has proposed several embedded mitigation measures. These are detailed in **In Principle Sensitive Features Mitigation Plan** **[APP-239]**, the

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Ref	MMO's Comment	Applicant's Response
		delivery of which is secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**).
MMO 4.6.21	The MMO notes in paragraph 8.9.267 in Chapter 8, that the assessment of behavioural effects of black seabream to UWN disturbance has been based on a threshold of 141 decibel (dB) re 1 micropascal (µPa) Sound Exposure Level, single strike (SELss) as defined by Kastelein et al., (2017).	The Applicant notes the comment from the MMO.
MMO 4.6.22	This goes against the advice from the MMO throughout the pre-application stage. In the Kastelein et al., (2017) study, a 50% initial response threshold occurred at an SELss of 141 dB re 1 mPa2 s for 44 centimetre (cm), captive-bred seabass. The study used piling playback and was conducted under laboratory conditions. However, under the same conditions, smaller seabass (31cm) responded to a lower SELss than the large fish, with a 50% initial response threshold occurring at 131 dB re 1 mPa2 s. As black seabream attain reproductive maturity at 30cm it is more appropriate to draw comparisons to the smaller seabass in the Kastelein et al., (2017) study. Furthermore, we do not consider a SELss of 141 dB re 1 mPa2 s used for a 44cm captive seabass to be an appropriate or conservative threshold, as adult black seabream usually only attain a size of 35-40cm (Ruiz, 2008).	The Applicant's position on the behavioural threshold for black seabream has been reliant upon existing literature and best available knowledge and understanding, as detailed in **paragraph 8.9.247** *et seq*. of **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]**. Throughout the consultation period, the Applicant has proposed a number of compromises to the MMO and Natural England in order to reach agreement on key issues relating to, inter alia, establishing a disturbance threshold relevant to black seabream, upon which to inform the impact assessment and appropriate mitigation. These include, but are not limited to, the modelling of more precautionary disturbance thresholds, and the commissioning of dedicated surveys of ambient noise levels in 2022 and 2023 to provide contemporary site-specific data, and the proposal of a variety of mitigation measures over the consultation period. As detailed in the **In Principle Sensitive Features Mitigation Plan [APP-239]** and **paragraph 8.9.296** of **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]** the Applicant considers the disturbance threshold of 141 dB SELss (based on a startle response observed in seabass) as an appropriate threshold for adult black seabream, as European seabass are of the same order as black seabream, perciform, and are therefore a suitable proxy for black seabream anatomically, physiologically and geographically. Furthermore, as detailed in **paragraphs 8.9.262** and **8.9.280** of **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]** a SELss of 141 dB re 1 mPa2 s is considered a conservative threshold for larger fish such as black seabream, as it is based on a short-lived startle response observed in seabass. (sudden short-lived

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		changes in swimming speed). Specifically, as reported by Kastelein et al. (2017), there was no evidence of any consistent sustained response to sound exposure by the study animals (changes in school cohesion, swimming depth, and speed) at levels up to 166dB SELss. As informed by Popper et al., (2014), behavioural disturbances are considered to be long term changes in behaviour and distribution, and should not include effects on single animals, or small changes in behaviour such as startle responses or minor movements. The use of the disturbance threshold of 141 dB SELss is therefore considered to be suitably precautionary, as if black seabream are exposed to underwater noise from pile driving, there are unlikely to be any adverse effects on their ecology, because the initial responses of European seabass after the onset of the piling sound observed were short-lived. Further to this, the approach used by the Applicant to define a suitable threshold for disturbance from underwater noise aligns with that used in other OWF applications and assessments, and therefore complies with current practice when approaching issues such as scientific data gaps and uncertainties, in order for planning decisions to be made. The Applicant will continue to engage with the MMO and Natural England to seek resolution in respect of this matter.
MMO 4.6.23	It should also be noted that, whilst seabass and black seabream have some physiological and anatomical similarity, seabass are broadcast spawners with pelagic eggs, so do not exhibit the same spawning, nesting and nest guarding behaviours. Given that the biological drivers and spawning behaviours in seabass are significantly different to those of black seabream, it is not possible to confidently infer whether wild black seabream will be affected in the same way that captive-bred seabass were in the Kastelein et. al., (2017) study.	Please refer to the Applicant's response to ref 4.6.22. The Applicant confirms that in the absence of a behavioural impact threshold for black seabream in available literature, a suitable proxy species, European seabass, has been used, as the physiological similarities provide the best available evidence for reaction to noise stimulus irrespective of the breeding behaviour differences between the two species.
MMO 4.6.24	The threshold of 135 dB SELss, as per Hawkins et al., (2014), could be considered a precautionary approach to modelling. However, this is still making inferences from a proxy species, the 135 dB threshold was based on a study of wild sprats i.e., clupeids with greater hearing sensitivity than seabass and black seabream.	Please refer to the Applicant's response to ref 4.6.22. The Applicant does not support the use of the threshold of 135 dB SELss, as per Hawkins *et al*., (2014) which is based on startle responses in sprat, a species not considered to be a suitable proxy for black seabream. Black seabream are less sensitive to underwater noise impacts than sprat, as they do not possess special structures mechanically linking the

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		swim bladder to the ear. Sprat are therefore not considered a suitable proxy for black seabream, anatomically or physiologically.
MMO 4.6.25	The MMO understands there was no agreement between MMO, Natural England (NE) and the Applicant on a noise threshold or proxy species for black seabream prior to submission of the Application. If the Applicant wants to pursue a noise threshold route the MMO would expect to see more noise modelling based on the 135 dB threshold. However, even if this is provided the MMO is unlikely to agree a threshold approach for black seabream.	Please refer to the Applicant's response to ref 4.6.22.
MMO 4.6.26	Please note in relation to advice on black sea bream the roles of MMO and NE differ and there may be a difference between advice from Natural England, as they provide advice on black seabream as a feature of Kingmere MCZ in the context of the conservation objectives, to ensure that the site fulfils its function and makes its due contribution to the Marine Protected Areas network, and advice from the MMO is on how the development might interact with fish species as a whole.	This has been noted by the Applicant.
MMO 4.6.27	In addition, the MMO would expect that noise modelling based on the 135 dB threshold is carried out as a standard practice to determine potential effects upon herring and herring spawning, given the location of Rampion 2 within the Eastern Channel region of the Downs herring spawning grounds.	The Applicant is undertaking underwater noise modelling of both unmitigated and mitigated piling scenarios, using the precautionary 135 dB threshold, to define the potential range of effect on spawning herring. The Applicant reiterates that they do not support the application of the 135 dB SEL contour to establish behavioural impact ranges for sensitive receptors. Specifically, this threshold is based on a study undertaken within a quiet loch on fish not involved in any particular activity (i.e. not spawning). It is therefore not considered appropriate to use this threshold within a much noisier area such as the English Channel (which is subject to high levels of anthropogenic activity and consequently noise), as the fish within this area will be acclimated to the noise and would be expected to have a correspondingly lower sensitivity to noise levels. The outputs of the modelling are presented at Deadline 1.

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<table>
<tr><th>Ref</th><th>MMO's Comment</th><th>Applicant's Response</th></tr>
<tr><td>MMO Table 2</td><td>The Applicant has outlined the potential impacts to fish ecology receptors which may arise during each phase of project activity in relation to the MDS. These are summarised in Table 2.
<table>
<tr><th colspan="4">Table 2: Impacts to fish ecology receptors</th></tr>
<tr><td>Potential Impacts</td><td>Construction</td><td>Operational</td><td>Decommissioning</td></tr>
<tr><td>Mortality, injury, behavioural changes and auditory masking arising from noise and vibration</td><td>✓</td><td>X</td><td>✓</td></tr>
<tr><td>Direct habitat loss/ disturbance in relation to installation and removal of the export cable, and maintenance within the export cable corridor</td><td>✓ ✓</td><td>✓</td><td></td></tr>
<tr><td>Direct habitat loss/ disturbance within the array</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>Long-term loss of habitat and increased hard substrate and structural complexity due to the presence of turbine foundations, scour protection and cable protection</td><td>x ✓</td><td>x</td><td></td></tr>
<tr><td>Temporary and localised increases in suspended sediment concentrations (SSC) and smothering</td><td>✓</td><td>X</td><td>X</td></tr>
<tr><td>Direct and indirect seabed disturbances leading to the release of sediment contaminants</td><td>✓</td><td>X</td><td>X</td></tr>
<tr><td>Electromagnetic field (EMF) impacts arising from cables</td><td>X</td><td>✓</td><td>X</td></tr>
</table></td><td>This is noted by the Applicant.</td></tr>
<tr><td>MMO 4.6.28</td><td>Temporary and localised increases in SSC and smothering should be scoped into all phases of the project as both planned and unplanned maintenance activities, including but not limited to the repair, replacement, or reburial of sections of inter array cable, are anticipated to be required routinely throughout the project lifecycle. Similarly, removal of infrastructure during the decommissioning stage will likely create disturbances to the seabed, thus suspending fine sediments. Therefore, there is potential for temporary and localised increases in SSC and smothering to affect fish receptors during the operation and decommissioning stages, as well as during construction.</td><td>The Applicant confirms that temporary and localised increased in SSC and smothering from the construction phase and decommissioning were assessed in paragraphs 8.9.386 et seq. and 8.11.21 et seq Chapter 8: Fish and shellfish ecology [APP-049], respectively.

As detailed in Chapter 6: Coastal Processes [APP-047] any sediment plumes from habitat disturbance will dissipate quickly after cessation of activities, due to settling and wider dispersion with the</td></tr>
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Ref	MMO's Comment	Applicant's Response
		concentrations reducing quickly over time to background levels. Impacts from increased SSC and deposition from the construction phase of development are predicted to be limited at 500m from the disturbance event, with no deposition expected >500m from the activity. Any increases in SSC and deposition during the operation and maintenance phase from cable repair works will be localised and intermittent, carried out over a 30-year period, with only a limited number of activities occurring within any one year. The area of disturbance from intermittent cable repair works in the operation and maintenance phase of the development (undertaken over 30 years) equates to approximately 13% of the worst-case area of habitat disturbance predicted during the construction phase of the development (3 years). As detailed in the **In Principle Sensitive Features Mitigation Plan [APP-239] (**as secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009])**, the Applicant has committed to the routing of the offshore Export Cable Corridor ensure micrositing where possible to identify the shortest feasible path avoiding subtidal chalk and reef features and areas considered to potentially support black seabream nesting (C-269). Furthermore, as informed by the outputs of the physical processes assessment (**Chapter 6: Coastal Processes [APP-047]**), the Applicant has committed to maintaining a working separation distance wherever possible from sensitive features, notably black seabream nesting areas, to limit the potential for direct and indirect impacts to arise (C-270). These measures will ensure that any remedial repair works undertaken in the operation and maintenance phase will also be located away from any sensitive features.
MMO 4.6.29	Impacts from accidental pollution during the construction phase, underwater noise as a result of operational turbines and displacement of fishing pressure in relation to the array have been scoped out of further assessment. The MMO agrees this is appropriate.	This is welcomed by the Applicant.

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MMO 4.6.30	The characterisation of fisheries and fish ecology has largely been informed by desk-based resources and past fisheries survey data that were collected for the Rampion 1 development. A summary of evidence sources used to characterise the baseline environment has been provided in Chapter 8 (Table 8.10). Several site-specific benthic and subtidal surveys within the Rampion 2 study area have been carried out and, whilst these are not fisheries specific surveys, the sediment grab samples acquired will help to inform the fish ecology impact assessment. The MMO is generally content that these sources are appropriate for this purpose (including the data used) are consistent with sources typically used to inform for other OWF applications and will provide suitable characterisation of the fish and habitats present in the eastern English Channel region.	This is welcomed by the Applicant.
MMO 4.6.31	Sources identified include a number of fish characterisation reports, technical surveys and environmental statement chapters from OWFs in the region (Rampion 1). The Applicant has also referenced a number of monitoring reports which specifically relate to black seabream and their nesting and spawning grounds. Whilst the MMO is content that these sources are generally appropriate for this purpose, we recommend the Applicant exercise a suitable degree of caution when reviewing, and making reference to these reports, particularly with regard to the age of the reports and underlying data, and the appropriateness of the survey methodologies used for species targeted. Caution should be shown in the reports and clarity is provided to show this.	This is welcomed by the Applicant, the limitations of the data sources used to inform the fish and shellfish baseline characterisation and assessment (including the age of the reports, and appropriateness of the survey methodologies area acknowledges in **paragraph 8.5.7** *et seq*. of **Chapter 8: Fish and shellfish ecology [APP-049]**, and appropriate caution has been applied throughout the assessment.
MMO 4.6.32	A site-specific geophysical survey was undertaken ahead of the PEIR. This study was carried out between July and August 2020 across the offshore PEIR Assessment Boundary. The results of the survey have been used to supplement existing data on likely black seabream nesting locations in areas relevant to the Proposed Development, but outside of areas previously subject to targeted survey (Kingmere MCZ). In the ES, Geophysical Survey (part 6 of 7), Figure 3.18 outlines "Biogenic structure – possible black bream nest aggregations", but caveats this by stating that "ground truthing is required to confirm the presence of these nesting areas". In the MMO's response to the PEIR consultation, it was requested that the relevant seabed images and maps from the geophysical survey report be compared to data from aggregate industry nest site monitoring to improve the level of confidence in the data as to the location and density of nests present. As it stands, the MMO does not believe that the geophysical survey increases confidence in the baseline characterisation for black seabream nesting locations.	The Applicant is confident that all available data has been presented at this stage to inform the baseline characterisation for black seabream nesting locations. A multi-year composite dataset of all available data at the time of writing was used for historic black seabream nesting, inclusive of data from the aggregates industry from 2002-2020 to inform the baseline characterisation and assessment in **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]**. The site-specific geophysical survey data was provided in **Appendix 9.4: Rampion 2 geophysical survey [APP-138-144]**. Comparisons of these data have been made in paragraph 8.6.76 et seq. of **Chapter 8: Fish and shellfish ecology [APP-049]**. Principal densities and aggregations of black bream nesting sites will be mapped in the Final Sensitive Features Mitigation Plan, utilising historic desk studies, survey data drawn from the aggregates industry surveys, geophysical survey data for the export cable corridor carried out in 2020 and the pre-construction survey data that will be collected post-consent. The final mitigation plan will be provided post-consent, once project parameters are finalised, as secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**).

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Ref	MMO's Comment	Applicant's Response
MMO 4.6.33	The Applicant has acknowledged that the installation of foundations within the Rampion 2 Array Area has the potential to lead to significant injury and/or disturbance to fish species due to underwater noise generated during pile driving. UWN modelling is based on worst-case scenarios of a 13.5m diameter monopile installed with a maximum hammer energy of 4,400kJ, and for a 4.5m diameter pin pile installed with maximum hammer energy of up to 2,500kJ. Tables 8.20 and 8.21 outline the likely impact ranges for mono- and pin-piling at the south location, carried out as a single piling scenario and sequential piling scenario. Likely impact ranges for mortality and potential mortal injury (207 Sound Exposure Level, cumulative (SELcum)), recoverable injury (203 SELcum), and temporary threshold shift (TTS) (186 SELcum) for stationary fish receptor, as per the pile driving threshold guidelines described by Popper et al. (2014) have been presented.	This is noted by the Applicant.
MMO 4.6.34	The MMO recommends the UWN contours for simultaneous mono-piling are included within the figures for Chapter 8. The Applicant has made repeated reference to the "the simultaneous installation of single monopiles at the East and West modelling locations" throughout Chapter 8, and modelling presented in the UWN Impact Assessment include simultaneous piling scenarios. Simultaneous piling (of pin and monopiles) represents a significant source of UWN, and the UWN contours for the worst-case scenarios for a stationary fish receptor should be presented clearly in a discrete subsection within the fish ecology chapter. In addition, modelled noise contours should also be presented for the unweighted SELSS 135dB as per Hawkins et al. (2014), for simultaneous piling scenarios of pin and monopiles. There have been lengthy discussions, prior to submission of the environmental statement, in an effort to determine a suitable threshold for modelling the likely range of behavioural impact for fish, in particular for herring and black seabream. As set out in section 4.6.27 above the MMO has requested modelling for the 135dB as per Hawkins et al., (2014) as the most appropriate, and sufficiently precautionary, threshold for modelling behavioural responses in black seabream, noting the threshold approach has not been agreed.	Please refer to the Applicant's response to ref 4.6.22. The Applicant confirms that the UWN contours for simultaneous mono-piling will be included in a technical note that will be submitted to the Examination in due course.
MMO 4.6.35	The MMO disagrees with the Applicant's assessment of potential impacts to herring from UWN. The MMO notes from the Underwater Noise Impact Assessment that the Applicant has calculated that the range of effect of behavioural responses in herring, based on the recommended modelled threshold of 135dB (Hawkins et al., 2014) may occur as far as 67km from the source of piling. Figure 8.20 presents the SELss contours for sequential mono-piling in the four modelling locations of Rampion Array, with noise contours presented based on the unweighted SELSS 135dB as per Hawkins et al. (2014). This is appropriate, and Figure 8.20 indicates significant overlap with the Downs herring spawning ground, as indicated by IHLS larval abundance data.	Please refer to the Applicant's response to ref 4.6.36 below.
MMO 4.6.36	However, the Applicant has concluded in paragraph 8.9.195 that, as the UWN contours do not directly overlap with the spawning grounds as indicated by the Coull et al. (1998) shapefile, the magnitude of a behavioural impact to spawning herring from UWN is considered to be negligible. Whilst the Coull et al. (1998) spawning maps are valuable for providing an indication of the location of herring spawning grounds based on historic data, it is more appropriate for the Applicant to draw their conclusions from overlap with areas of higher IHLS larval abundance as this is a more recent, direct measure of herring spawning intensity for this region. Further to this, Figures 8.18, 8.19 and 8.21, which present UWN for sequential pin-piling, sequential mono-piling, and simultaneous pin-piling, all indicate that the likely range of impact of TTS in fish is also anticipated to overlap the herring spawning grounds. Given the proximity of the Rampion Array to the active Downs herring spawning ground, the MMO has serious concerns as to the level of impact that piling within the Rampion Array will have on spawning herring unless suitable mitigation is implemented.	The Applicant considers the assessment of potential noise impacts to herring spawning grounds presented in **Chapter 8: Fish and Shellfish Ecology, Volume 2 [APP-049]** is appropriate and adequate. The Applicant is confident that there will be no disturbance to spawning adult herring, due to the distance of the spawning ground (as defined by Coull et al., 1998) from the array area (47 km). Any potential effects from underwater noise on herring are therefore in relation to herring eggs and larvae. It is an overlap with high densities of eggs and larvae, rather than spawning areas (as defined by Coull et al., 1998), that is illustrated in the Figures noted by the MMO. As larvae lack swim bladders or the connection between the swim bladder and the inner ear has not yet formed at this stage, they are considered to be less sensitive to underwater noise. The impact ranges for injurious effects of eggs and larvae are localised to

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Ref	MMO's Comment	Applicant's Response
		the source (6.2 km for underwater noise impacts from sequential piling operations), and therefore will have no interaction with areas of high larval densities. The Applicant has assessed the potential for impacts on eggs and larvae in **Chapter 8: Fish and shellfish ecology, Volume 2** **[APP-049]**. Given the stationary nature of eggs and larvae the potential for behavioural impacts is considered limited, therefore the worst-case impact ranges for effects on larvae is considered to relate to the potential for TTS. As detailed in **paragraph 8.9.238** et seq. given the low degree of disturbance at intermediate (100s of metres) and far (1,000s of metres) of larvae (in accordance with the Popper *et al*., (2014) criteria) and the distance of areas of high-density herring larvae from the Proposed Development array area (30 km), the risk of disturbance to herring larvae is considered to be low, and therefore not significant. Notwithstanding this, as detailed in the **In Principle Sensitive Features Mitigation Plan** **[APP-239]**, the Applicant has committed to the implementation of at least one offshore piling noise mitigation technology, therefore mitigating against potential impacts from underwater noise to herring eggs and larvae from spawning in November through to January (Coull et al., 1998). The Applicant has therefore presented the mitigated mortality and potential mortal injury impact ranges (210 dB SEL_{cum}) relative to areas of high densities of herring larvae in **Appendix 9 – Further Information for Action Points 38, 39** **(document reference 8.25.9)**. As evident, with the implementation of at least one noise abatement measure, there is no interaction of the recoverable injury impact contours with areas of high-density herring larvae. Furthermore, the Applicant is undertaking underwater noise modelling of both unmitigated and mitigated piling scenarios, using the precautionary 135 dB threshold, to define the potential range of effect on spawning herring. Underwater noise contours will also be presented in relation to IHLS density heatmaps, detailing the drift of larvae from the herring spawning ground. The Applicant reiterates that they do not support the application of the 135 dB SEL contour to establish behavioural impact ranges for sensitive

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Ref	MMO's Comment	Applicant's Response
		receptors. The use of this threshold for noise impact assessments is expressly advised against by the authors of the paper. Specifically, this threshold is based on a study undertaken within a quiet loch on fish not involved in any particular activity (i.e. not spawning), and it is therefore not considered appropriate to use this threshold within a much noisier area such as the English Channel (which is subject to high levels of anthropogenic activity and consequently noise) as the fish within this area will be acclimated to the noise and would be expected to have a correspondingly lower sensitivity to noise levels. The outputs of the modelling are presented at Deadline 1 in **Appendix 9 – Further Information for Action Points 38, 39 (document reference 8.25.9)**.
MMO 4.6.37	The MMO disagrees with the Applicant's assessment of the potential impact to black seabream from UWN as being of "minor adverse significance, which is Not Significant in EIA terms". As outlined in 4.6.21 - 4.6.24 above, black seabream exhibits highly specific spawning and nest guarding behaviour and as a result are a designated feature of conservation importance within the Kingmere MCZ, along with the geological seabed features and sediments which provide suitable spawning and nesting habitat within the MCZ. There has not been any conclusive agreement as to a threshold where an effect/no effect boundary can be determined for black seabream. As a result, several thresholds have been proposed. The Applicant also asserts that "black seabream spawning and nesting grounds are located outside the noise contours of piling within the Rampion 2 array area." This is in contradiction to UWN noise contours presented in Figure 8.18 – 8.21 which show clear overlap with both the Kingmere MCZ, and the nesting sites identified within the ECC. In addition, it can be inferred from Figure 8.20 that the impact range for behavioural responses in black seabream, based on the threshold of 135 dB, as per Hawkins et al., (2014), will also cover the nesting sites which have been identified.	The Applicant confirms that the conclusion of 'minor adverse' significance for underwater noise impacts on nesting black seabream has been made on the basis that mitigation measures as detailed in the **In Principle Mitigation Plan for Sensitive Features [APP-239]** will be implemented. The Applicant confirms that the assertion that 'black seabream spawning and nesting grounds are located outside the noise contours of piling within the Proposed Development array area' relates to the recoverable injury threshold, which has no overlap with the Kingmere MCZ or areas of identified black bream spawning and nesting grounds (as evidenced in **Figure 8.18 – 8.21, Chapter 8: Fish and Shellfish – Figures, Volume 3 [APP-081]**). The Applicant reiterates that it does not support the application of the 135 dB SEL contour to establish behavioural impact ranges for fish species, including those Group 4 fish that are considered hearing-specialists (e.g. herring), and highlights that black seabream are categorised in a lower noise-sensitivity group (Group 3) as set out within **Chapter 8: Fish and Shellfish Ecology, Volume 2 [APP-049]**. .
MMO 4.6.38	The MMO agrees with the Applicants recognition that the ECC is located in close proximity to the Kingmere MCZ where there are important chalk habitats and sediments for black seabream nesting, and that nests have been identified within the proposed ECC area of search. The Applicant has also noted that black seabream are sensitive to seabed disturbances and that cable trenching has the potential to directly damage nesting areas as well as undermine the integrity of the seabed for future nest building. With this in mind, black seabream have been noted as having 'high' sensitivity to direct disturbance resulting from the installation of the export cable, which the MMO supports.	This is noted by the Applicant.

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Ref	MMO's Comment	Applicant's Response
MMO 4.6.39	The MMO has some concerns regarding construction activities causing damage and disturbance to black bream nesting habitat during their spawning and nesting season. There will be direct disturbance to seabed habitat resulting from the installation of the export cable during the four months of offshore export cable installation activity. However, the Applicant has categorised the magnitude of this impact as negligible, based on the implementation of embedded mitigation (measures C-269 – 273 in Annex 1). Whilst the MMO is supportive of measures to minimise disturbance caused through trenching activities, and associated increases in SSC, the MMO believes it is premature to determine the magnitude of the impact as 'negligible' given these measures need some further refinement. For example, measures C-269 (micro-siting of the cable route) and C-270 (separation buffer between cable laying activities and sensitive features) may need further refining before the export cable route is finalised. The MMO is supportive of the Applicant's assertion that cable installation activities within the ECC area are to be undertaken outside of the identified black seabream spawning and nesting season (point 4.6.49).	The Applicant confirms that the refinement of the proposed measures will only be possible once the design parameters have been finalised post consent, however it also highlights that Commitment C-273 ensures no construction activities are undertaken in the offshore export cable corridor during the March to July period, therefore avoiding damage or disturbance to black bream nesting habitat during the breeding/nesting season. The remaining refinements to the mitigation measures set out within the **In Principle Sensitive Features Mitigation Plan** **[APP-239]** will be captured in the final sensitive features mitigation plan, as secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**) as informed by the pre-construction surveys, which are secured in Condition 16(2)(b) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**). The in-principle Plan provides both the key principles and the framework upon which the final sensitive features mitigation plan will be drafted to ensure the magnitude of impacts will be negligible, and notes that as detailed in the dML Conditions noted above, will be submitted to the MMO for approval.
MMO 4.6.40	The Applicant has outlined a number of proposed environmental measures under table 8.13 in Chapter 8, which are intended to minimise significant disturbance to sensitive receptors (identified principally as black seabream, herring and seahorse). These are outlined in Annex 2. It is noted that the Applicant has asserted that these measures will be secured either through inclusion in the DCO requirements, or through conditioning onto the DML. The MMO is supportive of the Applicant implementing targeted mitigation however, the MMO considers that some of these measures need further refinement, to be agreed and secured through focussed and targeted consultations in which the relevant evidence can be carefully examined, and each issue can be adequately addressed.	Please refer to the Applicant's response to ref 4.6.39.
MMO 4.6.41	Further detail of mitigation for sensitive features has been provided in the following documents and comments have been provided below: • In Principle Sensitive Features Mitigation Plan: and • Offshore In Principal Monitoring	This is noted by the Applicant.
MMO 4.6.42	Further to point 4.6.41, above, the Applicant has provided further details of the mitigation measures relating to the export cable. These are addressed individually below but are generally appropriate.	This is welcomed by the Applicant.
MMO 4.6.43	Cable route design and micrositing: Pre-construction surveys will be undertaken ahead of installation works and the results of these, along with the export cable specifications and installation equipment parameters, will inform the final routing/micro-siting of cables. A preliminary routeing design exercise has been included within the In Principle Sensitive Features Mitigation Plan. The approach to	This is welcomed by the Applicant.

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Ref	MMO's Comment	Applicant's Response
	micro-siting and refining offshore export cable corridor route, as outlined in paragraphs 5.2.8 – 5.2.9, is appropriate. Nonetheless, the Applicant asserts that the refined offshore export cable route will be based on the final project parameters and pre-construction data. At this stage, the MMO is content with this as a means of minimising the risk to black seabream nesting habitat.	
MMO 4.6.44	Developing appropriate buffer distances for sensitive receptors: Avoidance by routeing design reduces the potential for direct disturbance to black seabream from export cable installation works, however, the Applicant has indicated that they will utilise appropriate buffering between works and sensitive receptor locations to similarly reduce the potential for indirect impacts to arise. Buffering distances will be informed by the findings of the physical processes assessment, as set out within Chapter 6 of the ES. For gravelly sediments, a maximum average deposition thickness of 30 to 60cm, over an area up to 5 to 10m downstream of the trenching as the work proceeds along the length of the trench is predicted. For sandy sediments, the depositional area is greater, comprising a depositional depth range of 3- 6cm over an area up to 100 to 200m downstream of the active trenching location as installation proceeds along the length of the trench.	This is noted by the Applicant.
MMO 4.6.45	The Applicant has outlined that the target distance for laying cables will be set at around 250m inside the refined offshore export cable corridor, and that an additional 50m buffer will be implemented surrounding sensitive features (black seabream nests). This will provide for a separation distance between cable installation activity and the edge of any black bream nesting area of circa 300m. Notwithstanding the comment in point 4.6.61 - 4.6.62 below, at this stage, the MMO is content with this as a means of minimising the risk to black seabream nesting habitat.	This is welcomed by the Applicant.
MMO 4.6.46	At this stage, the MMO is content with the proposed separation buffer as this distance will reduce the likely volume of sand and gravelly sediments which may be deposited over nesting sites. The separation buffer may not offer the same protection in relation to finer sediments. Figure 5.1 (In Principle Sensitive Features Mitigation Plan) outlines an example output from a routeing study showing bream nest areas and the separation distance. It would be helpful to have this figure presented in a higher resolution as the label is not entirely clear, and to have the distances in meters between the cable lay route and the nest areas indicated for completeness.	This is welcomed by the Applicant. A higher resolution version of Figure 5.1 (**In Principle Sensitive Features Mitigation Plan (document reference 7.17)** has been submitted at Deadline 1.
MMO 4.6.47	Use of specialist cable laying and installation techniques: The Applicant suggests two trenching solutions which may reduce the temporal and spatial area of impact during cable laying operations. As far as the MMO can reasonably determine, these suggestions seem appropriate, and the MMO agrees that details of the specific equipment and methods should be presented for review in the Final Plan.	This is welcomed by the Applicant.
MMO 4.6.48	Seasonal restriction for cable installation works: The Applicant has stated that "all cable installation activities within the offshore export cable corridor area are undertaken outside of the identified [black seabream] breeding season of March to July". The MMO is in support of this measure to minimise disturbance to individuals actively engaged in spawning and nest guarding, as there is potential for noise and vibration caused by machinery to disturb spawning and nesting individuals, and for increased suspended sediments arising from cable installation work to settle/smother nesting sites. The MMO would highlight that for the purpose of capturing this mitigation in the DML, the specific dates for the black seabream breeding season should be specified as follows 1 March to 31 July (inclusive) and be a stand-alone condition and not part of a mitigation plan for clarity during the activities.	The Applicant confirms that, following agreement of the measures, all embedded mitigation measures will be secured within the DCO/dML, in this instance the commitment (C-273), ensuring no construction activities are undertaken in the offshore export cable corridor during the March to July period, will be detailed within the final sensitive features mitigation plan, which is secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**).

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Ref	MMO's Comment	Applicant's Response
MMO 4.6.49	The Applicant has stated that the impact ranges for mortality or injurious effects resulting from impulsive UWN are predicted to be relatively localised, and not found to represent an impact at a population scale on any receptor. Mitigation measures relating to UWN are therefore focused on the lower noise levels likely to elicit TTS and behavioural responses in fish, particularly during sensitive periods. The noise mitigation plan has been designed on the principles that noise abatement will be in place for the entirety of the piling operations with additional measures put in place during the breeding season, assumptions on attenuation performance of the noise mitigation techniques are based on demonstrable performance of the technology, noise abatement is focused on reducing noise emission levels below the level at which a meaningful behavioural response might be expected to occur at the locations of sensitive receptors.	This is noted by the Applicant.
MMO 4.6.50	A series of mitigated piling scenarios have been presented using various noise abatement techniques in Figures 5.4 – 5.9. Some of these scenarios present multiple noise abatement techniques (low noise hammer technology and double bubble curtains (DBBC)) which appear to produce significant noise reductions (up to 25dB), however, the MMO notes from previous advice that the likely achievable noise reduction in dB will depend on the site conditions at Rampion 2. This should be taken into account and presented within the documents.	The Applicant is undertaking additional work to provide a comparison of the environmental conditions at the Proposed Development with other projects where Noise Abatement Systems (NAS) have been deployed, this will be submitted to the Examination in due course. .
MMO 4.6.51	The UWN modelling upon which the UWN mitigation plan is based has used a received noise threshold of 141 dB in relation to black seabream. The MMO does not consider this to be sufficiently precautionary and has maintained that modelling should be done based on 135 dB SELss, as per Hawkins et al., (2014), noting the threshold approach has not been agreed.	Please refer to the Applicants response to ref 4.6.22.
MMO 4.6.52	135 dB SELss, as per Hawkins et al., (2014) is also relevant for modelling impact ranges for likely behavioural effect herring and should have been modelled in this mitigation plan. Additionally, the noise abatement options have not been modelled in the context of the Downs herring spawning ground, based on the Applicant's conclusion that "there is a low risk of any adverse effects arising even without mitigation as set out within Chapter 8: Fish and shellfish ecology". Please refer to points 4.6.38 - 4.6.39 as to why the MMO disagrees with this conclusion.	Please refer to the Applicants response to ref 4.6.36. .
MMO 4.6.53	Based on the UWN contours presented in Figure 8.20 of Chapter 8 which present the 135 dB contour, UWN from piling undertaken at the Rampion 2 array, particularly from piling activities at the west and south modelling locations, will overlap the Downs herring spawning ground. Given that the UWN abatement scenarios in the mitigation plan have been presented based on a threshold of 141 dB, the range of behavioural impact for herring will likely be higher than has been presented. The Applicant should repeat the modelling exercise and present UWN modelling for the noise abatement reduction scenarios using a behavioural response threshold of 135 dB SELss. The MMO also requests to see the unmitigated UWN contours provided alongside each noise abatement scenario for comparison.	Please refer to the Applicant's response to ref 4.6.52.
MMO 4.6.54	In relation to mitigating the effects of UWN on black seabream, the Applicant has proposed a zoning plan for the periods of March to June, inclusive, which is then adjusted during July. The Applicant has outlined the following approach:	This is noted by the Applicant.
MMO 4.6.55	During 1st March to 30th June: The piling exclusion area will encompass the western part of the Array area, and no piling will therefore be undertaken in the western part of the Array (Figure 1, below). Piling in the eastern part of the Array area will be subject to mitigation using the combination of a low noise hammer technology and double bubble curtain (DBBC). Piling in eastern part will commence in the part of the array furthest from the Kingmere MCZ (in the southeast corner), and detailed scheduling of piling locations will be determined once the layout of WTGs and substations has been finalised.	This is noted by the Applicant.

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Ref	MMO's Comment	Applicant's Response
MMO 4.6.56	During July: Piling may be undertaken in the western part of the Array. If piling is to be undertaken in the western part of the Array, installation will be still subject to a combination of a low noise hammer technology and DBBC. Piling in the western part of the array will be subject to a sequencing plan such that piling will commence at locations furthest from the Kingmere MCZ (in the southwest corner). Again, detailed scheduling of piling locations will be determined once the layout of WTGs and substations has been finalised.	This is noted by the Applicant.
MMO 4.6.57	During 1st August through to 28th February: The Applicant has stated that *"whilst there is no requirement for a spatial zoning plan for the remainder of the year, the Applicant will continue to mitigate piling noise. Therefore, for the purpose of this Plan, from 1st August through to 28th February during the construction period, the Applicant will propose to utilise at least one offshore piling noise mitigation technology".*	This is noted by the Applicant.
MMO 4.6.58	Zoning of piling works within the array needs further discussion along with the additional modelling requested. The MMO supports the Applicant's assertion that noise abatement will be in place for the entirety of the piling operations. However, it is not clear why July has been treated separately within the Applicant's proposed zoning plan. Black seabream are at their most sensitive when undertaking spawning and guarding their nests, and as a result, the conservation objectives of the Kingmere MCZ are of heightened importance during the spawning period. As we have clear evidence that black seabream continues to spawn and maintain their nests into and during July, we must consider that July is part of the spawning period. Therefore, it is necessary that any mitigation applied to Rampion 2 must include July.	A full piling exclusion from March-July inclusive would have significant issues for the practical development of the Proposed Development, with implications for the construction programme. Whilst, in 2021, the black seabream spawning/nesting period was extended to include the month of July, spawning/nesting activity during this month is considerably reduced and therefore much less impact on the population breeding success is anticipated than the preceding months, as set out in **Chapter 8: Fish and Shellfish Ecology, Volume 2** **[APP-049]**, with 5% of nests attended by males by the 10th July and 0% by the 30th July in a 2020 survey. This compared with 89.4% nests attended by males in June of the same year. Noting that some nesting is still potentially occurring in July, the **In Principle Sensitive Features Mitigation Plan** **[APP-239]**, which is secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[PEPD-009]**), sets out multiple mitigation measures during the month of July; these include (in the event that piling is undertaken in July in the western part of the array) the combination of a low noise hammer technology and Double Big Bubble Curtain, and a sequencing approach to piling starting in locations furthest from the MCZ. Through the application of a variety of mitigation measures in July, the Applicant is confident that piling operations will not hinder the Kingmere MCZ conservation objectives..
MMO 4.6.59	During the previous Expert Topic Groups (ETGs), the Applicant indicated that they would not have sufficient reactivity during construction to undertake monitoring to determine the presence or absence of black seabream nests during July, and so would not be able to confidently determine whether the nests are abandoned or not. Given this context, we restate our position that any defined mitigation period must include the whole spawning period of March – July, inclusive. Acceptance of any zoning plan which permits piling	The Applicant reiterates that a full piling exclusion from March-July inclusive would have significant issues for the practical development of the Proposed Development.

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	to take place during the black seabream spawning and nesting season must be based on appropriate modelling and agreement with the SNCB.	As set out in the **In Principle Sensitive Features Mitigation Plan [APP-239]**, the Applicant has proposed multiple mitigation measures during the month of July (in the event that piling is undertaken in July). These include the combination of a low noise hammer technology and DBBC, and a sequencing approach to piling starting in locations furthest from the MCZ. Through the application of a variety of mitigation measures in July, the Applicant is confident that piling operations will not hinder the Kingmere MCZ conservation objectives.
MMO 4.6.60	MMO recommends a seasonal piling restriction during the black seabream spawning and nesting period of 1 March – 31 July (inclusive).	Please refer to the Applicant's response to ref 4.6.59.
MMO 4.6.61	MMO also considers it necessary for a seasonal piling restriction to be implemented in order to prevent disturbance to spawning herring and their eggs and larvae at the Downs spawning ground during the spawning period of 1st November to 31st January (inclusive).	The Applicant refers to its response to MMO 4.6.36 above and considers the assessment of potential noise impacts to herring spawning grounds presented in **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]** to be appropriate and adequate. There is no overlap with the spawning ground of piling noise at a level that will disturb spawning adults (186 dB SELcum) at the recognised spawning ground and no overlap of noise at injurious levels (210 dB SELcum) intersecting areas of high larval abundance on the basis of the IHLS data presented within the assessment. On this basis, there is no requirement for a seasonal restriction on piling at the Proposed Development site for the protection of herring.
MMO 4.6.62	Pre- and post-construction surveys should be implemented to enhance the baseline data and to validate any predictions made in the ES on nesting habitat recoverability. These surveys should be suitably timed and use appropriate methods. Therefore, MMO recommends that a requirement for pre- and post-construction monitoring of black bream nesting habitat be included in the DML to ensure that the habitat recovers and continues to support black bream nesting, and that comparisons of nest location and density pre- and post-construction can be made. This should be clearly referred to within conditions 16-18.	The Applicant confirms that the details of monitoring will be agreed with the MMO prior to construction. The Applicant notes that black bream nesting locations will be subject to pre-construction survey, as secured in Condition 16(2)(b) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**), which makes specific reference to black seabream nesting sites. The **Offshore In Principle Monitoring Plan [APP-240]** (as secured in Condition 11(1)(j) of the dMLs Schedules 11 and 12 of the **draft DCO [PEPD-009]**), presents details of the monitoring proposals, with Condition 17 of the dMLs explicitly referring to the need to ensure monitoring surveys must be in

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		accordance with the principles set out in the in-principle monitoring plan and explaining how these will inform comparison with pre-construction conditions and/or enable the validation of key predictions within the ES. The Applicant notes that monitoring proposals have been based on the identification of significant effects within the ES and as such, do not currently include specific monitoring of black seabream nesting habitat since no significant effects were identified within the EIA. However, the Applicant will consider whether, in light of the MMO's comments, any additional detail is required within the current **Offshore In Principle Monitoring Plan [APP-240].** The Applicant also notes that Condition 18 (1) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**), also provides specific reference and linkage to Condition 11(1)(j) and the provision of any proposed post-construction surveys, again in accordance with the in-principle monitoring Plan and explicitly references nesting sites for black seabream. The Applicant will continue to engage with MMO, their advisors and the Examining Authority to develop additional detail for proposed monitoring, should this be deemed to be required.
MMO 4.6.63	MMO would welcome further engagement to develop suitable monitoring methods to ensure the data collected are robust and meaningful. This should be done as soon as possible to ensure the data is collected at the appropriate times and not delayed.	Please refer to the Applicant's response to ref 4.6.62.
MMO 4.6.64	To summarise MMO has major concerns outstanding and considers further information is required on modelling along with further discussions on mitigation.	This is acknowledged by the Applicant.
4.7 Underwater Noise		
MMO 4.7.1	MMO considers that the appropriate receptors have been scoped in for assessment, and no activities or impacts relating to underwater noise have been scoped out of assessment for marine mammals. MMO defers to Natural England for comments on the Marine Mammal baseline.	The Applicant welcomes the MMO's confirmation that the assessment considers receptors and activities/impacts appropriately. The Applicant refers to its responses to Natural England's Relevant Representation in respect to Marine Mammals as set out in **Rampion 2 Relevant Representations Response - Prescribed Consultees, Natural England, Appendix C (document reference 8.24.3)**.
MMO 4.7.2	Overall, the key potential impacts with regard to underwater noise have been accurately identified. MMO is largely of the opinion that the appropriate evidence base has generally been used throughout the assessment. However, aspects which the MMO does not agree with or believe requires further clarification are included below.	The Applicant welcomes that the MMO considers that overall, the key potential impacts regarding underwater noise have been accurately identified and that the appropriate evidence base has generally been

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<table>
<tr><th>Ref</th><th>MMO’s Comment</th><th>Applicant’s Response</th></tr>
<tr><td></td><td></td><td>used throughout the assessment. The Applicant has responded to further points raised by the MMO in the sections below.</td></tr>
<tr><td>MMO 4.7.3</td><td>Following finalisation of the project design and pre-construction surveys, if construction activities are expected to cause significant disturbance or injury to a European Protected Species (EPS) (cetaceans), an EPS licence(s) will be applied for where applicable. MMO would encourage early engagement with the MMO conservation team.</td><td>Should it be required, the Applicant will submit an EPS licence application in the post-consent phase and Natural England, the MMO and other relevant SNCBs will be consulted on the application.</td></tr>
<tr><td>MMO 4.7.4</td><td>MMO believes that the mitigation options are adequately captured within the relevant plans. Noting that a Construction Method Statement (as required under the DML) Condition 11 in Schedules 11 and 12 of the DCO) will be produced, post-consent, prior to construction which will include details of the procedures for soft start and ramp up of piling activity.</td><td>The Applicant welcomes the position of the MMO.</td></tr>
<tr><td>MMO 4.7.5</td><td>Further, two draft Marine Mammal Mitigation Protocols (MMMPs) have been submitted as part of the DCO Application: one for Unexploded Ordnance (UXO) Clearance and one for piling. The draft MMMPs detail the proposed environmental measures to reduce the risk of any physical or permanent auditory injury to marine mammals during all piling and any UXO operations. Specific comments on both MMMPs are provided in Section 5.4 - 5.5 of this document.</td><td>See Applicant responses in section 5.4 and 5.5 below.</td></tr>
<tr><td>MMO 4.7.6</td><td>In addition to these MMMPs, an In Principle Sensitive Features Mitigation Plan has also been submitted as part of the DCO application. This plan sets out the approach for the Applicant to deliver the required environmental measures for the Project to ensure the avoidance of significant disturbance of black seabream in relation to the Kingmere MCZ site Conservation Objectives. Please see comments on this plan in Section 5.7.</td><td>See Applicant responses in section 5.7 below.</td></tr>
<tr><td>MMO 4.7.7</td><td>MMO has several general observations and comments regarding Appendix 11.3 which have been included in Table 3.</td><td>Please refer to the Applicant’s responses below.</td></tr>
<tr><td>MMO Table 3</td><td>
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<tr><td>Table 3</td><td></td><td></td></tr>
<tr><td>Section / Table</td><td>MMO Comments</td><td></td></tr>
<tr><td colspan="2">Appendix 11.3 Underwater noise assessment technical report</td><td></td></tr>
<tr><td>Section 2.2 Analysis of environmental effects</td><td>The general approach / methodology to the underwater noise modelling is largely appropriate, and effort has been undertaken to produce an informative report, along with details of the input parameters used in the modelling. The assessment refers to appropriate noise exposure criteria for marine receptors. The MMO agrees with the report that at the time of writing, Southall et al. (2019) and Popper et al. (2014) represent the most up-to-date and authoritative criteria for marine mammals and fish respectively.</td><td>The Applicant welcomes the MMO's agreement to the general approach to underwater noise modelling and the Applicant’s use of the most contemporary and authoritative criteria for noise impacts</td></tr>
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Ref	MMO's Comment		Applicant's Response
		For the assessment of the cumulative sound exposure, a fleeing animal receptor has been assumed for marine mammals, with 'fleeing' speeds of 3.25 m/s for low- frequency cetaceans and 1.5 m/s for all other receptors. For fish receptors, both a fleeing and stationary animal model has been assumed. Please note that MMO is not aware of empirical evidence to support fleeing in fish, and therefore the predictions based on a stationary receptor will be the most appropriate/relevant. Fleeing assumptions can have a significant effect on the assessment outcomes. For example, as per Table 4-15 in the report, maximum TTS ranges of 41 km are predicted for a stationary (fish) receptor, whereas for a fleeing (fish) receptor, this range is reduced to 25 km.	The Applicant confirms that the fleeing receptor approach is considered relevant where mobile species are not spatially restricted (due to breeding activity for example). Where species are restricted in such ways, the assessment has been undertaken using the static receptor modelling outputs.
	Table 2-10 Levels for a 50 % response was observed in fish from Hawkins et al. (2014)	Please note that the Hawkins et al. (2014) paper does not refer to unweighted peak sound pressure levels, so it is not clear where the thresholds of 173 dB re 1 µPa and 168 dB re 1 µPa unweighted peak have been derived from. MMO recommends that these thresholds are removed from Table 2-10 to avoid confusion.	The MMO is correct that these figures are not derived from Hawkins et al. (2014), and are in fact derived from McCauley et al. (2000), and the Applicant is grateful for identification of this error, this has been added to the Errata submitted at Deadline 1. The Applicant confirme that this has not been used in any determination of impact distances or ranges.
	Modelling confidence (section 3.1)	"The current version of the INSPIRE model attempts to calculate an average fit to the measures noise levels at all ranges. The current version of INSPIRE (version 5.1) is the product of re-analysing all the impact piling noise measurements in Subacoustech Environmental's measurement database and cross-referencing it with blow energy data from piling logs…. " The MMO welcomes this clarification, and we acknowledge the drive for reducing unnecessary conservatism in modelling. It is noted that the current version of INSPIRE should produce more realistic predictions.	The Applicant welcomes the MMO's view that the current version of INSPIRE produces more realistic predictions.

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Ref	MMO's Comment	Applicant's Response
	Figure 3-1 presents a comparison between example measured impact piling data and modelled data using INSPIRE version 5.1. Importantly, this comparison is lacking context. i. Firstly, MMO notes that the pile sizes used in this comparison are much smaller (i.e., 1.8 m, 9.5 m, 6.1 m and 6.0 m) than the proposed (up to) 13.5 m diameter monopiles for Rampion 2. It is not clear how INSPIRE scales up the smaller piles. Additionally, have other factors, such as the penetration depth and the water depth, been considered in the modelling of the source levels? ii. Secondly, the comparison should make clear the hammer energies used. Are they relevant for this application? iii. Furthermore, the comparisons presented in Figure 3-1 are for the peak sound pressure (SPLpeak) only, while for the vast majority of the predictions in this appendix, which are derived from cumulative sound exposure (SELcum) calculations, the relevant metric is the single strike Sound Exposure Level (SELss), and not SPLpeak. iv. Transparency in the modelling of these parameters is crucial for determining the model predictions.	i. INSPIRE bases its calculation of apparent source noise levels on extensive data available from the installation of, currently, up to 9.5 m piles offshore. It is recognised that the proposed piles may be larger, and an extrapolation is used to predict these. INSPIRE has used this extrapolation technique to produce confident results that have been verified by subsequent measurements on installed OWFs over approximately the last 10 years. The water depth is included in this calculation. The penetration depth is relevant for subsea driven piles, where the pile does not extend for the entire water depth and is included where that could occur. ii. Details of hammer energies that are included in this comparison can be added for a future report revision, if required. iii. Comparisons have been undertaken for SEL as well as SPLpeak to develop the model. The SPLpeak comparisons were included as an example, but SELs can also be included in a future report revision, if required. iv. The intention for greater transparency in the modelling parameters is noted, and will be taken on board for future report revisions.

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Ref	MMO's Comment		Applicant's Response
	Section 3.2 Modelling parameters	Modelling has been undertaken at four representative locations, covering the extents and various water depths at the Rampion 2 site. These locations are at the North West (NW), South (S), East (E), and West (W) of the site boundary. Cumulative effects have been considered with piling at the E and W locations. The report confirms that in a 24-hour period, it is expected that either a maximum of 2 monopile foundations or 4 jacket foundations can be installed. It is therefore appropriate that this is included as part of the modelling assuming that the foundations are installed consecutively. In addition, there is a possibility that piling may occur simultaneously at two separate locations. Simultaneous piling for the worst-case parameters has been modelled at the E and W locations covering the largest spread of source locations. Table 3-6 and 3-7 show the source levels estimated for this study. The worst-case monopile should be 13.5 m (and not 12 m as the table states) although the maximum hammer energy is correct at 4,400 kJ.	This error has since been identified and corrected. Modelling was undertaken for 13.5 m but there were incorrect instances where this was referred in the report as 12 m. This has been added to the Errata submitted at Deadline 1.
	Section 4 Modelling Results	Monopile foundations (worst-case assuming 2 monopiles): The largest ranges are predicted at the S modelling location (with the deeper water depths of 53.4 m). For marine mammals, the following maximum PTS (SELcum) injury ranges are predicted: · 15 km for low frequency cetaceans (i.e., minke whale), · 7.4 km for very-high frequency cetaceans (i.e., harbour porpoise), and · < 100 m for phocid pinnipeds (i.e., seals). TTS ranges of 46 km, 34 km and 16 km were predicted for LF Cetaceans, VHF cetaceans and phocids respectively. PTS SPLpeak ranges of <50 m, 680 m and 60 m were predicted for LF Cetaceans, VHF cetaceans and phocids respectively. For fish, a maximum range of 41 km (stationary receptor) was predicted for TTS using the Popper et al. (2014) criteria (for 2 sequentially installed piles), as well as potential mortal injury (7.4 km) and recoverable injury (12 km). Based on a (behavioural) threshold of 135 dB SELss from Hawkins et al. (2014), effects are predicted out to 67 km (for a single monopile).	This is noted by the Applicant.

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Ref	MMO's Comment		Applicant's Response
		Jacket pile foundations (worst-case of four sequential piles): The largest ranges are also predicted at the S modelling location. For marine mammals, the following maximum PTS (SELcum) injury ranges are predicted: · 13 km for low frequency cetaceans (i.e., minke whale), · 5.9 km for very-high frequency cetaceans (i.e., harbour porpoise), and · < 100 m for phocid pinnipeds (i.e., seals). TTS ranges of 43 km, 31 km and 15 km were predicted for LF Cetaceans, VHF cetaceans and phocids respectively. PTS SPLpeak ranges of <50 m, 560 m and <50 m were predicted for LF Cetaceans, VHF cetaceans and phocids respectively. For fish, a maximum range of 44 km (stationary receptor) was predicted for TTS using the Popper et al. (2014) criteria, as well as potential mortal injury (8.9 km) and recoverable injury (14 km). Based on a (behavioural) threshold of 135 dB SELss from Hawkins et al. (2014), effects are predicted out to 63 km (for a single jacket pile).	This is noted by the Applicant.
		The report states that when comparing the impact ranges for a single pile installation and multiple sequential pile installations, the overall increases are negligible, as by the time the subsequent piles are installed, the fleeing receptor is at such a distance from the source that the additional exposure is minimal. The largest increases seen for these scenarios are only a few hundred metres.	This is noted by the Applicant.
	Section 4 Modelling Results Section 4.3 Multiple location piling	As noted above, additional modelling has been carried out to investigate the potential impacts of two piling installations occurring simultaneously at separated foundation locations. Using the monopile and jacket pile foundation piling scenarios, modelling has been carried out for simultaneous piling at both the E and W locations, representing a worst case spread of locations. Results are presented in section 4.3 of the report.	This is noted by the Applicant.

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Ref	MMO's Comment		Applicant's Response
	Section 5 Other Noise Sources; Table 5-4 and Table 5-5	For SELcum calculations, the assessment assumes that all sources will be operating for a worst-case 12 hours in any given 24-hour period apart from vessel noise which is assumed to be present for 24 hours a day. MMO agrees that all sources considered in this section are considered non-impulsive or continuous. A fleeing marine mammal receptor has been considered, and small effect ranges (largely <100m, with a few exceptions1) have been predicted for other sources of noise (i.e., cable laying, suction dredging, trenching, rock placement and vessels). Small effect ranges (< 50 m) are predicted for fish receptors. 1For VHF cetaceans, the TTS range for rock placement is 1.0 km, 200 m for large vessels, and 200 m for suction dredging.	The Applicant welcomes the general agreement on the sources considered.
	Section 5.1 Noise making activities	"The calculation of underwater noise transmission loss for the non-impulsive sources is based on an empirical analysis of the noise measurements taken on transects around these sources by Subacoustech. The predictions use the following principle fitted to the measured data, where R is the range from the source, N is the transmission loss and α is the absorption loss: Received Level = Source level (SL) – N log10 R – αR". This equation suggests that the propagation loss is of the form Nlog10R + alpha R, which is what we would normally expect to see; however, the examples in Table 5.2 show that the alpha coefficient is negative. For example, for trenching, the approximate transmission (or propagation) loss is 13 log10 R – 0.0004R. This is somewhat unusual (although conservative); please could the Applicant provide further clarification?	The basic equation as stated here is correct and agreed. The geometric loss must be a reduction from the source level, and the absorption must also be a reduction. This will be corrected in revisions: it is confirmed that the basic concept of RL = SL minus geometric spreading minus absorption function is followed.
	Table 5-2	Table 5-2 appropriately provides a summary of the estimated unweighted source levels and transmission losses for the different construction (continuous) noise sources considered. Figure 5-1 shows the 1/3 octave frequency bands used as a basis for the Southall et al. (2019) weightings used in the simple modelling. The MMO understands that propagation loss is a function of the environment. Please could the Applicant explain why the propagation loss varies quite significantly between the different sources, particularly when the source spectra (as per Fig. 5-1) are not that different?	The shortage of data on operational turbine underwater noise is correct and acknowledged by the Applicant. Scaling factors identified in Tougaard et al (2020) have been used, and the limited data on which this is based is also acknowledged. The impact of the deep water and long distance sound transmission will be negligible due to the relatively low noise levels under consideration.

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	Table 5-6 Characteristics of measured operational	A summary of sites where operational WTG measurements have previously been collected is provided in Table 5-6 (below for reference). As the report appropriately highlights, the turbine sizes for modelling at Rampion 2 are larger than those shown in Table 5-6, with turbines between 10 and 18 MW being considered.	This is noted by the Applicant. Although water depth is likely to make a difference in terms of sound transmission, the estimated potential effects are so limited that any influence this would have will not lead to any change in significance.
	WTGs used as a basis for modelling	Rampion 2 is also situated in greater water depths. Available data on which to base a scaling factor is limited, thereby adding further uncertainties into the assessment of potential risk.	This is noted by the Applicant.
	Section 5.2 Operational WTG noise	To predict operational WTG noise levels at Rampion 2, the extrapolated source level from the measured data at each of the sites has been taken and then a linear correction factor has been included to scale up the source levels (Figure 5-2). The report acknowledges that this fit is speculative, as available data is limited. The SELcum calculations have appropriately assumed that the operational WTG noise is present 24 hours a day. A stationary receptor has been considered. For all marine receptors, predicted effects are <100 m, with a couple of exceptions2. 2 Predicted TTS range for LF cetacean is 150 m, and 440 m for VHF cetacean.	This is noted by the Applicant.
	Section 5.3 UXO clearance	The maximum equivalent charge weight for the potential UXO devices that could be present at Rampion 2 has been estimated as 525 kg. This has been modelled alongside a range of smaller charge weights of 25, 55, 120, and 240 kg.	This is noted by the Applicant.

Wind farm	Lynn	Inner Dowsing	Gunfleet Sands 1 & 2	Gunfleet Sands 3
Type of turbine used	Siemens SWT-3.6-107	Siemens SWT-3.6-107	Siemens SWT-3.6-107	Siemens SWT-6.0-120
Number of turbines	27	27	48	2
Power rating	3.6 MW	3.6 MW	3.6 MW	6 MW
Rotor diameter	107 m	107 m	107 m	120 m
Water depths	6 to 8 m	6 to 14 m	0 to 15 m	5 to 12 m
Representative sediment type	Sandy gravel / muddy sandy gravel	Sandy gravel / muddy sandy gravel	Sand / muddy sand / muddy sandy gravel	Sand / muddy sand / muddy sandy gravel
Turbine separation	500 m	500 m	890 m	435 m

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Ref	MMO's Comment	Applicant's Response
	It is appropriate that the estimation of the noise source level for each charge weight has been carried out in accordance with the methodology of Soloway and Dahl (2014). It is noted that an attenuation correction has been added to the Soloway and Dahl (2014) equations for the absorption over long ranges (i.e., of the order of thousands of metres), based on measurements of high intensity noise propagation taken in the North Sea and Irish Sea. The maximum PTS range (SPLpeak) calculated (based on the worst-case UXO) is 13 km for VHF cetaceans (SPLpeak criteria) (with a TTS range of 23 km). For fish, the maximum range is 810 m. MMO has conducted a spot check of the worst- case predictions which look reasonable (assuming the methodology from Soloway and Dahl and no attenuation correction).	This is noted and the Applicant welcomes the agreement from the MMO on the assessment of UXO clearance for marine mammals and fish.
MMO 4.7.8	MMO notes that some of the language and statements presented in this report are misleading and unsubstantiated. For example, section 2.6.10 of Appendix 11.2 states that *"modelling the SELcum impact ranges of PTS with a 'fleeing animal' model, as is typical in noise impact assessments, are subject to both above-mentioned uncertainties and the result is a highly precautionary prediction of impact ranges. As a result of these and the uncertainties on animal movement, model parameters chosen, such as swim speed, are generally highly conservative and, when considered across multiple parameters, this precaution is compounded. Therefore, the resulting predictions are highly precautionary and very unlikely to be realised". The actual concept of fleeing is not precautionary, and as the report highlights, there are uncertainties associated with animal movements and model parameters. For example, to assume that an animal swims directly and consistently away from the source may not be a true reflection of what happens in reality. Therefore, the MMO does not agree that the resulting predictions are "highly precautionary and very unlikely to be realised".*	The Applicant highlights that swim speed is just one factor that leads to the high levels of precaution in the cumulative SEL modelling. Key factors also include the assumption that there would be no recovery of hearing threshold between pulses, and the assumption that noise is impulsive at all distances. While there are uncertainties associated with fleeing, the fleeing speed values used in the assessment are conservative. For example, 1.5 m/s was assumed for porpoise fleeing speeds, whereas Kastelein et al (2018) have shown that harbour porpoise respond to piling playbacks by swimming at a sustained mean swimming speed of 7.1 km/hr for 30 mins (7.1 km/hr = 1.97 m/s). The Applicant therefore considers that the resulting predictions and highly precautionary and unlikely to be realised.
MMO 4.7.9	As raised during the PEIR consultation, the information presented in section 2.5.3 onwards (TTS Assessment) only demonstrates what is not known about the significance of TTS – there is no evidence presented to confirm that it isn't significant, only conjecture. One could equally argue that at lower received sound levels, animals are less likely to flee (see Figure 2-2 on page 24), and so proportionally more likely to induce TTS than this assessment suggests. The TTS/PTS assessment seems to consider only an animal fleeing directly away from the source, whereas Fig. 2-2 demonstrates that even at received SELss of 160 dB, around 10% of animals will not flee, so there are uncertainties which tend toward underestimation of risk here too.	The Applicant notes the MMO's view, however, TTS is not actually assessed as an impact pathway in terms of sensitivity, magnitude or significance in the ES. As agreed in stakeholder consultation, only TTS impact ranges and number of animals are presented as requested.
MMO 4.7.10	In the ES, the sensitivity of all cetaceans to PTS-onset is assessed as Low. In the PEIR, all cetaceans were originally assessed as having a 'Medium' sensitivity to PTS. However, it was raised by MMO that the consultant had not demonstrated that PTS would have merely a medium risk, only that there is uncertainty about how significant PTS may be for individual animals. Until and unless empirical evidence can shed light on whether this opinion holds water, the precautionary principle will continue to apply. Thus, it is recommended that cetaceans should be assessed as having a high sensitivity to PTS.	As outlined in **Appendix 11.2: Marine mammal quantitative underwater noise impact assessment, Volume 4 [APP-148]**, based on the best available evidence available to date (see detail in **Appendix 9** Booth & Heinis 2018), experts recommend that PTS from piling is unlikely to significantly affect the fitness of individuals (ability to survive and reproduce).

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Ref	MMO's Comment	Applicant's Response
		This does not align with a sensitivity score of High and it is on this basis that the Applicant considers the sensitivity set out within the ES is robust and appropriate..
MMO 4.7.11	In paragraph 11.9.42, the results of the underwater noise modelling have been misinterpreted, and it is incorrect to state that "to be at risk of auditory injury, an animal would have to stay within the immediate vicinity of the noise source for 24 hours. This is considered unrealistic and therefore, the risk of auditory injury to marine mammals from these activities is considered to be de minimis". The underwater noise assessment (presented in Appendix 11.3) concludes that for non-impulsive (or continuous) noise sources, any marine mammal would have to be less than 100 m from the continuous noise source at the start of the activity, in most cases, to acquire the necessary exposure to induce PTS as per Southall et al. (2019). This is because the noise assessment assumed a fleeing animal receptor. Furthermore, the noise assessment assumed that non-continuous sources were operating for a worst-case of 12 hours in any given 24-hour periods apart from vessel noise (which was assumed to be present for 24 hours). Thus, Chapter 11 should be corrected accordingly.	The Applicant notes the error and confirms it has been amended to "As such, to be at risk of auditory injury, an animal would have to be less than 100 m from the continuous noise source at the start of the activity to acquire the necessary exposure to induce PTS as per Southall et al. (2019)." in the updated version of **Chapter 11: Marine Mammals** submitted at Deadline 1.
MMO 4.7.12	The document states: *"No known audiogram is available for black seabream. However, red seabream (Pagrus major) is in the same family, Sparidae. An audiogram (using Auditory Evoked Potential (AEP) and behavioural techniques) was measured by Kojima et al., (2010) for this species and provides the best available proxy. It is believed that this species would be in Group 3 of the hearing categories for fishes identified by Popper et al., (2014), fishes with swim bladders that are close, but not intimately connected, to the ear. These fishes are sensitive to both particle motion and sound pressure but will be less sensitive to noise than those in Group 4. No particle motion audiogram is available for either species".* The MMO agrees with the likely category as per Popper et al. (2014) and, as there is no known audiogram available for black seabream (to our knowledge), it may be suitable to use the audiogram for red seabream as a proxy for black seabream in terms of hearing ability.	The Applicant welcomes the agreement of the MMO of the use of red seabream as an audiogram-proxy for black seabream. The Applicant also confirms that within **Volume 2 Chapter 8 Fish and shellfish Ecology [APP-049]** reference was also made to research based on seabass as a proxy (Kastelein et al. 2017), as well as red seabream, to inform the recommendation for a noise limit at the Kingmere MCZ. Seabass and red seabream are considered morphologically similar species to black seabream.
MMO 4.7.13	Section 3 Ambient underwater noise at Kingmere MCZ: it is important to note that the short term (15-day) continuous background noise survey can only provide a snapshot of ambient noise levels within the vicinity. Essentially, a short-term measure of the ambient noise should not be used as representative of the ambient noise at that location for any time other than the period of time during which the measurements were undertaken (Good Practice Guide for Underwater Noise Measurement, 2014). To comprehensively characterise the ambient noise levels in specific locations or regions, long-term measurements are required.	The Applicant notes that an additional survey was completed in 2023 which covers black seabream spawning period from April to July inclusive was submitted at Procedural Deadline A; **Appendix 8.3 Underwater noise study for sea bream disturbance, Volume 4 [APP-134]**. This study provides for the long-term measurements at the specific MCZ location noted by the MMO.
MMO 4.7.14	Section 4 Soundscape at Kingmere MCZ: MMO agrees that acoustic disturbance should only be considered for audible sound. At a minimum, an introduced noise must be (a) above the hearing threshold and (b) exceed the background noise. Nonetheless, and with reference to the following statement in Section 4: "*The "loud vessel" is approximately only 25 dB above the seabream hearing threshold. This implies that as a result of the seabream sensitivity, the "loud vessel" would be audible to the fish but is unlikely to be perceived as "loud"".* MMO is unsure how this is relevant, especially as we are concerned primarily with piling noise (not vessel noise). Furthermore, whether or not a sound is perceived as "loud" does not necessarily indicate its potential for behavioural disturbance.	The Applicant notes that this information was provided as context - the only underwater noise sources that were clear during the background noise were caused by vessel movements and these were referred to. This does not form a material part of any assessment, however ambient noise levels are potentially relevant to the setting of disturbance threshold criteria for species in the area.

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Ref	MMO's Comment	Applicant's Response
MMO 4.7.16	Section 5 Impact of piling noise at Kingmere MCZ: Figure 5 is missing the spectra for loud boat noise and piling at 7,800 m.	**Figure 5** in **Appendix 8.3: Underwater noise study for sea bream disturbance, Volume 4 [APP-134]** will be updated for Deadline 2.
MMO 4.7.17	Figure 2 in Annex 3 (Figure 5 from the Applicants document) equates measurements made using two different metrics: (1) the sound pressure level (SPLrms), for the seabream audiogram and "loud boat" noise; and (2) the single-strike sound exposure level (SELss), used for the piling measurements. SELss is a measure of sound energy, not of sound pressure. This fact unfortunately invalidates the argument put forward by the Applicant: *"An additional frequency spectrum has been included on Figure 5 that adjusts the 7800 m pile strike down to an equivalent noise level of 141dB SELss. It can be seen that this is only slightly higher than the "loud boat" spectrum. Therefore, at approximately 30 dB above the hearing threshold, it is anticipated that the risk of sustained disturbance is low. The calculated noise level for this would be worst case (maximum hammer energy)".* Since an SELss of, e.g., 141 dB re 1 µPa2 s, may in fact include instantaneous sound pressure levels much greater than 141 dB re 1 µPa, hence exceeding the audiogram threshold. In other words, the piling noise levels are likely to exceed the seabream audiogram to a significantly greater extent than Figure 5 suggests.	The Applicant recognises the complexity of the use of different noise metrics, and that they are not necessarily compatible. Although sound pressure (SPLrms) and energy (SELss) are not identical, they do provide a reasonable order-of-magnitude equivalent. There are many unknowns in the prediction of disturbance and the estimation that 30 dB is anticipated to lead to a low level of sustained disturbance could be more or could be less, and would be affected by context and probably habituation.
MMO 4.7.18	While vessel noise is a continuous noise source, piling is impulsive, and so a direct comparison of their potential behavioural effects is invalid, since the temporal and pulsed characteristics of noise have a significant influence on behavioural effects, with pulsed and intermittent sound generally understood to have more severe effects.	The Applicant agrees with this description, the comparison between piling and continuous noise was made as the only existing noise sources on site were continuous-type noises. It is acknowledged that these will affect marine fauna in a different way than impulsive noise.
MMO 4.7.19	For example, as highlighted by Neo et al. (2014), intermittent sounds, such as from pile driving, may have a stronger behavioural impact on fish than continuous sounds, such as from drilling, even though the latter may have higher total accumulated energy. In this study, Neo et al. investigated whether sounds with different temporal structure resulted in different behavioural changes in European seabass. All sound treatments elicited similar behavioural changes, including startle responses, increased swimming speed, increased group cohesion and bottom diving. However, with all other sound conditions being the same, intermittent exposure resulted in significantly slower behavioural recovery to pre-exposure levels compared to continuous exposure. MMO considers Figure 2 highlights that piling noise has greatest energy at frequencies which red seabream are most sensitive (between ~100 and 1000 Hz), emphasising the risk of impact to this species, and thereby potentially to black seabream	It is acknowledged that the effects of impulsive (including intermittent) noise and continuous noise will be different, but will depend on context. It is also worth noting that the performance of a bubble curtain will be greater at frequencies between 100 and 1000 Hz (Bellman *et al*. 2020) and so there will be a greater attenuation in the frequencies identified by the MMO. Please refer also to responses to 4.7.18 and 4.7.21.
MMO 4.7.20	Page 13 of the study presents the various mitigation options for consideration (i.e., IHC PULSE hammer, MENCK MNRU hammer, and double bubble curtains) and associated decibel (dB) reduction in source level for each option. Evidence (i.e., references) should be provided to support the dB reduction for each option, including with respect to frequency (see following comment).	Limited data are currently available for the IHC and Menck hammers, which are not yet in widespread use. The only data available are from the manufacturers, which appears to be based on modelling and is not frequency specific, but is nonetheless the best publicly available. Further requests have been made to the manufacturers for empirical data. Data from dBBC are as per Bellman *et al.* (2020) (see 4.7.21).

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Ref	MMO's Comment	Applicant's Response
MMO 4.7.21	The efficacy of a noise abatement system to reduce the risk of impact depends on the frequency range at which sound energy is reduced and on the target species, as each species is sensitive to a certain frequency range. More information should be presented, particularly since fish are typically more sensitive to sound at low frequencies, where the noise reduction from noise abatement systems tends to be smaller. (Note: for example, a 15-dB reduction is for broadband SELss, not certain frequency bands).	The MMO is correct that the frequency data is important. In fact, the supplied single figure (broadband frequency) data of -15 dB may be precautionary: Bellman *et al*. 2020, Fig 32 suggests that greater attenuations at frequencies between 100 and 1000 Hz as recommended by MMO can be achieved. The average broadband figure appears to be restricted by very low frequency data (<32 Hz) No published data are available for MNRU and IHC Pulse, but the manufacturers' estimates provided will only improve the figures provided above further.
4.8 Chapter 10 Commercial Fisheries		
MMO 4.8.1	MMO defers to the National Federation of Fishermen's Organisations and Sussex Inshore Fisheries and Conservation Authorities, along with standalone representatives on matters of commercial fisheries. The MMO will continue to be part of the discussions relating to securing any mitigation, monitoring or other conditions required within the DMLs.	The position of the MMO is acknowledged by the Applicant.
4.9 Chapter 12 Offshore and intertidal ornithology		
MMO 4.9.1	MMO defers to Natural England as SNCB and supports any comments raised in relation to the Ornithology. The MMO will continue to be part of the discussions relating to securing any mitigation and monitoring or other conditions required within the DMLs.	The position of the MMO is acknowledged by the Applicant.
4.10 Chapter 13 Shipping and navigation		
MMO 4.10.1	MMO defers to the Maritime and Coastguard Agency and Trinity House on matters of shipping and navigation and supports any comments raised. The MMO will continue to be part of the discussions relating to securing any mitigation, monitoring or other conditions required within the DMLs.	The position of the MMO is acknowledged by the Applicant.
4.11 Chapter 14 Civil and Military Aviation		
MMO 4.11.1	MMO defers to the Civil Aviation Authority, Ministry of Defence and Maritime and Coastguard Agency on matters of Civil and military aviation and supports any comments raised. The MMO will continue to be part of the discussions relating to securing any mitigation and monitoring or other conditions required within the DMLs.	The position of the MMO is acknowledged by the Applicant.
4.12 Chapter 15 Seascape, Landscape and Visual Resources		

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Ref	MMO's Comment	Applicant's Response
MMO 4.12.1	MMO defers to Natural England as the SNCB, along with Historic England and the Local Planning Authorities on matters of Seascape, Landscape and Visual Resources and supports any comments raised. The MMO will continue to be part of the discussions relating to securing any mitigation and monitoring or other conditions required within the DMLs.	The position of the MMO is acknowledged by the Applicant.
4.13 Chapter 16 Marine Archaeology		
MMO 4.13.1	MMO defers to the Historic England on matters of marine archaeology and supports any comments raised. The MMO will continue to be part of the discussions relating to securing any mitigation, monitoring or other conditions required within the DMLs.	The Applicant welcomes MMO's agreement to work with Historic England on marine archaeology.
5.1 Outline Project Environmental Management Plan		
MMO 5.1.1	Section 1.4 states "The Final PEMP will be formally reviewed at least three months prior to construction commencing.". MMO requests that this is updated in line with the submission date as part of the DML– for this document the MMO believes 6 months prior to construction is appropriate.	As the project comprises a nationally significant infrastructure project it is necessary for there to be a degree of certainty as to the programme for its delivery, particularly given the need for the project to contribute to the Government achieving its net zero target. Recently made DCOs for offshore wind farms include a mix of periods for determination of either four or six months. Whilst the Applicant is content to extend the current three month period identified for the PEMP, it considers four months is considered an appropriate period for the approval of submitted details rather than the requested six. However, the applicant is willing to work with the MMO to identify any approvals which require a longer determination period.
MMO 5.2.1	In relation to the type of protection – micro-plastics could occur from some of the suggested protection. Impacts should be assessed and the MMO recommends protection without plastic should not be used. Reference should be included in the plan. For example: "*In light of inadequate scientific evidence at the time of writing regarding the impacts of plastic frond mattressing, the MMO recommend that polypropylene frond mattresses are not used due to the potential for the release of microplastics directly into the benthic habitat and the lack of evidence to the contrary. Therefore, if at the detailed design stage, there is reliable evidence demonstrating that plastic fronding specifically has negative impacts on the environment that outweigh any potential positive impacts then the project would be required to remove plastic frond mattressing from the design."*	The Applicant is committed to minimising the release of plastics Ainto the marine environment, and commits to using suitable alternatives, where this is practicable. C-288 this has been added to the commitments register as and will be secured through the the next iteration of the **Outline Scour Protection and Cable Protection Plan [APP-234]** secured in Condition 11(1)(i) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**) at Deadline 3.

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Ref	MMO's Comment	Applicant's Response
MMO 5.2.2	Section 3.4.3 highlights that where conditions are not suitable in shallow water to "ground out" the export cable installation vessel on the seabed, there may be a need to construct temporary sand/gravel beds. These sand/gravel beds are to be removed after, however there is no description of where this material will be sourced or disposed of, this should be clarified.	The material for the temporary beds will be sourced from outside of the site from a suitable licenced supplier. Once finished with, the beds will be removed from the site. It is possible that that the material used for beds could be used as cable protection material. Where this does not occur, the material used from the bed will be completely removed from site for recycling.
MMO 5.3.1	MMO defers to the Historic England on the Outline Marine Written Schemes of Investigation and supports any comments raised. The MMO will continue to be part of the discussions relating to any conditions within the DML.	The position of the MMO is acknowledged by the Applicant.
MMO 5.4.1	MMO has no major concerns with the draft piling MMMP at this stage – it is appropriate that the final MMMP will be updated once final project details are known, to take account of the most suitable mitigation measures available at the time of construction.	The Applicant welcomes the MMO's comment.
MMO 5.4.2	Table 4-1 sets out the relevant embedded environmental measures. The MMO welcomes the development of a Vessel Management Plan (C-51), pre-construction to minimise encounters with marine mammals.	The Applicant welcomes the MMO's comment.
MMO 5.4.3	MMO strongly welcomes commitment C-265 – that at least one offshore piling noise mitigation technology will be utilised to deliver underwater noise attenuation to reduce predicted impacts to sensitive receptors at relevant MCZ sites. The MMO agrees that although the commitment is specific to MCZs (which are not designated for marine mammal features) C-265 is relevant to marine mammals as the use of mitigation technologies will reduce the risk of potential impact, including auditory injury and would be welcomed for all piles.	The Applicant welcomes the MMO approval of the embedded measure C-265, to utilise at least one offshore piling noise mitigation technology deliver underwater noise attenuation to reduce predicted impacts to all sensitive receptors, including marine mammals. This measure is secured through the **Offshore In Principle Monitoring Plan [APP-240]** (as secured in Condition 11(1)(j) of the dMLs Schedules 11 and 12 of the **draft DCO [PEPD-009]**).
MMO 5.4.4	relevance, paragraph 5.1.34 of the MMMP confirms that for cumulative Permanent Threshold Shift (PTS) ranges, additional noise abatement systems will have to be considered and will be required to mitigate for the impact ranges in the final piling MMMP. The MMMP also refers to the standard measures typically employed for offshore wind farm developments including a mitigation zone, marine mammal observers, passive acoustic monitoring, acoustic deterrent devices, and soft start procedures. This is welcomed by the MMO.	The Applicant welcomes the MMO's approval for committing to consider the additional noise abatement systems, that will be required to mitigate for the impact ranges in the final piling MMMP, which is secured in Condition 11(1)(l) of the dMLs Schedules 11 and 12 of the **draft DCO [PEPD-009]**).
5.5 Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Protocol		

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Ref	MMO's Comment	Applicant's Response
MMO 5.5.1	MMO has no major concerns regarding the piling MMMP with the draft UXO MMMP at this stage – it is appropriate that the final MMMP will be updated once more information is available on the sizes and locations of any UXO devices present and consideration of the most suitable mitigation measures available.	The Applicant welcomes that the MMO has no major concerns regarding the **Draft Piling Marine Mammal Mitigation Protocol [APP-236]** and with the **Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Protocol [APP-237]** at this stage.
MMO 5.5.2	Please note that there is a mistake in Table 3-1 and the predicted SPLpeak PTS range for VHF cetaceans and the 525 kg charge weight is 13 km (and not 2.5 km).	The Applicant notes this error in **Table 3-1** of the **Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Protocol [APP-237]** and confirms it has been corrected to 13 km in the errata submitted at Deadline 1
MMO 5.5.3	MMO recommends the Applicant change "underwear noise" to "underwater noise" in Table 4-1 under C-275. MMO fully supports the use of low order methods to dispose of UXOs using the deflagration method, and welcome that where other less impactful methods exist at the point of applying for a Marine Licence, those alternative methods may be proposed instead, where evidence support their efficacy. MMO would highlight that low order methods should be used in the first instance and high order to only be used as a last resort.	The Applicant notes the error in **Table 4-1** of the **Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Protocol [APP-237]** under C-275. It has been corrected to read "*underwater noise*" in the errata submitted at Deadline 1.
MMO 5.5.4	The MMMP refers to the standard measures typically employed for UXO clearance operations including a mitigation zone, marine mammal observers, passive acoustic monitoring, acoustic deterrent devices and soft start procedures. It is appropriate that bubble curtains are proposed for high-order detonations, should high order not be avoidable.	The Applicant welcomes the MMO's support of the low order methods of disposal of UXO and the confirmation of the standard measures typically employed for UXO clearance.
5.6 Outline Offshore Operations and Maintenance Plan [APP-238]		
MMO 5.6.1	Section 1.2 states "The Final PEMP will be formally reviewed at least three months prior to construction commencing.". MMO requests that this is updated in line with the submission date as part of the DML– for this document the MMO believes 6 months prior to construction is appropriate.	The Applicant assumes this is related to the **Offshore Outline Operations and Maintenance Plan [APP-238]** which has a review period of four months. As the project comprises a nationally significant infrastructure project it is necessary for there to be a degree of certainty as to the programme for its delivery, particularly given the need for the project to contribute to the Government achieving its net zero target. Recently made DCOs for offshore wind farms include a mix of periods for determination of either four or six months. The Applicant considers four months is an appropriate period for the approval of submitted details rather than the requested six. However, the applicant is willing to work with the MMO to identify

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Ref	MMO's Comment	Applicant's Response
		any approvals which require a longer determination period.
MMO 5.6.2	The outline operations and maintenance plan (Appendix A) provides a list of operations and maintenance. Activities are colour-coded as to whether they are likely to need additional licence or consultation with the MMO or relevant Statutory Nature Conservation Bodies (SNCBs). Due to the need to ensure that the MMO meets the OSPAR guidelines with regard to notification of chemicals those activities that involve the need for additional or amendments of chemicals should have the notification status to the MMO changed to yes, like the following examples: • Generator replacement painting, cleaning (including marine growth and guano), and repair. • Scheduled general maintenance work, for example: oil replacement, mechanical works. • Generator replacement painting, cleaning (including marine growth and guano), and repair. • Painting and cleaning (including marine growth and guano). • Grout and corrosion works.	Noting the Applicants response regarding Condition 9 (1) in MMO Table 1 above, the Applicant will update the **Offshore Outline Operations and Maintenance Plan [APP-238]** as requested by the MMO. The notification of chemicals would follow what is set out in Condition 9 (1) **draft DCO [PEPD-009]**.
MMO 5.6.3	Appendix A – New cable protection – it should be clear what new cable protection means.	The DCO sets out a total maximum amount of cable protection that can be applied within 10 years of the licenced activities beginning, in terms of both volume of material and area which it can cover. If either the cable protection needs to exceed the amounts specified in the DCO or it is needed to be installed more than 10 years after thecommencement of the licenced activities, a new licence would be needed.
MMO 5.6.4	Appendix A – Additional scour protection around foundations – could this also be classed as new scour protection? This should be expanded.	The DCO sets out a total maximum amount of scour protection that can be installed around the foundation structures as part of the licenced activities.
MMO 5.6.5	Table B-1 sets out the maximum assessment assumptions for operational and maintenance activities. Along with the maximum footprint of seabed disturbance, the total volume anticipated for disposal as a result of drilled arisings trenching burying and ground clearance should also be included in this table.	The Applicant can confirm that drilling will not be required during the operations and maintenance phase of the Proposed Development. The Applicant will update the table in the next iteration the **Offshore Outline Operations and Maintenance Plan [APP-238]** to include provision for the disposal volumes arising as part of cable repair/ replacement works.
5.7 In Principle Sensitive Features Mitigation Plan [APP-239]		

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Ref	MMO's Comment	Applicant's Response
MMO 5.7.1	The Plan reflects the commitment from the Applicant to undertake required measures to reduce the potential for any significant disturbance on sensitive features of relevant MCZs, specifically the Kingmere MCZ, the Beach Head East and West MCZs and Selsey Bill and the Hounds MCZ, during breeding/nesting periods. The Plan sets out the necessary mitigation that will be secured through the DCO, whilst allowing scope for refinement of the precise mitigation measures to be adopted once the final design and construction methods for Rampion 2 have been confirmed. This will enable the most appropriate project-related measures to be confirmed, based on best knowledge, evidence, and proven technology available at the time of construction. Of relevance, as noted in Verfuss et al. (2019), a reduction of sound energy in the lower frequency range reduces the impact on species groups with low frequency hearing, while a reduction of sound energy in the higher frequency range will be effective for species groups with high frequency hearing. Thus, some noise abatement systems are more effective for one species group than for another, depending on the frequency range at which noise energy will be reduced compared to the unmitigated noise.	The Applicant welcomes the MMO support of the **In Principle Sensitive Features Mitigation Plan** [APP-239].
MMO 5.7.3	MMO strongly recommends the Applicant commit to using noise abatement technologies which achieve the greatest amount of noise reduction.	The Applicant has provided underwater modelling outputs for the implementation of various noise abatement measures to ensure the Conservation Objectives of relevant MCZs will not be hindered. Furthermore, the Applicant has also proposed seasonal restrictions and zoning to mitigate against impacts from underwater noise on sensitive features. These are provided in the **In Principle Sensitive Features Mitigation Plan [APP-239]**, which is secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**), . In addition to this, the Applicant has applied significant measures of precaution when defining appropriate mitigation measures, including the modelling of minimal underwater noise attenuations afforded by each noise abatement measure.
MMO 5.7.4	Further comments can be found in Section 4.6 of this document.	This is noted by the Applicant.
MMO 5.7.5	The MMO supports the seasonal restriction (among other commitments) to ensure Offshore Export Cable Corridor installation activities are undertaken outside the black seabream breeding period (March – July) to avoid any effects from installation works on black seabream nesting within or outside of the Kingmere MCZ (Commitment C-273).	The applicant welcomes agreement from the MMO.
MMO 5.7.6	MMO believes that the applicant is essentially proposing that a zoned approach to mitigation within the array area from March – July inclusively is undertaken. The Applicant confirms that at least one offshore pilling noise mitigation technology will be utilised to deliver underwater noise attenuation in order to reduce predicted impacts to sensitive receptors at relevant MCZ sites (C-265).	The Applicant can confirm it is proposing a zoned approach to mitigation within the array area from March – July inclusively. The Applicant welcomes further input from the MMO to develop the mitigation proposals.
MMO 5.7.7	In developing the spatial zoning strategy, three main noise mitigation measures will be employed. These are: (i) General hammer noise mitigation; (ii) Low noise installation hammers; and (iii) (iii) Double Big Bubble Curtain (DBBC).	This is noted by the Applicant.

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Ref	MMO's Comment	Applicant's Response
MMO 5.7.8	MMO agrees with the plan that any assumptions on attenuation performance of the noise mitigation techniques should be based on demonstrable performance of the technology. As noted above, MMO recommends the Applicant should commit to using noise abatement technologies which achieve the greatest amount of noise reduction.	The Applicant has provided underwater modelling outputs for the implementation of various noise abatement measures to ensure the Conservation Objectives of relevant MCZs will not be hindered. Furthermore, the Applicant has also proposed seasonal restrictions and zoning to mitigate against impacts from underwater noise on sensitive features. These are provided in the **In Principle Sensitive Features Mitigation Plan [APP-239],** which is secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**). In addition to this, the Applicant has applied significant measures of precaution when defining appropriate mitigation measures, including the modelling of minimal underwater noise attenuations afforded by each noise abatement measure.
MMO 5.7.9	The Plan states that "Noise abatement is focused on reducing (received) noise levels at the locations of sensitive receptors (i.e., at relevant MCZs) below the level at which a meaningful behavioural response might be expected to occur, which could then result in a significant effect on the breeding population (of black seabream or seahorse) during the breeding/nesting season, subsequently impacting upon the conservation objectives for the MCZ". The current zoning plan is based on a disturbance threshold of 141 dB SELss. However, as highlighted by the Applicant, a 'behavioural threshold' has yet to be agreed between all parties.	The Applicant's position on the behavioural threshold for black seabream draws upon existing literature and best available knowledge and understanding, as detailed in **paragraph 8.9.247** et seq. of **Chapter 8: Fish and shellfish ecology, Volume 2 [APP-049]**. Further evidence has been provided to Natural England and the MMO within various technical notes submitted during the evidence plan process, **Evidence Plan (Part 2 of 11) and (Part 3 of 11) [APP-244 and APP-245]** respectively. Site specific ambient noise monitoring has also been undertaken in 2022 and 2023, to demonstrate the background noise levels to which resident seabream are already exposed, and to establish a baseline for any new noise (such as from impact piling) (**Appendix 8.3 Underwater noise study for sea bream disturbance, Volume 4 [APP-134]**). As detailed in the **In Principle Sensitive Features Mitigation Plan [APP-239]**, the Applicant considers the disturbance threshold of 141 dB SELss as suitably precautionary, as it is based on a short-lived startle response observed in seabass. As informed by Popper et al., (2014), behavioural disturbances are considered to be long term changes in behaviour and distribution, and should not include effects on single animals, or small changes in behaviour such as startle responses or minor movements. Further to this, the approach used by the Applicant to define a suitable threshold for disturbance from

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Ref	MMO's Comment	Applicant's Response
		underwater noise aligns with that used in other OWF applications, and therefore complies with current practice when approaching issues such as scientific data gaps and uncertainties, in order for planning decisions to be made.
MMO 5.7.10	Within the Plan, there is a section on 'developing an appropriate disturbance threshold' (sections 5.3.20 – 5.3.25). MMO has previously provided comments during the pre-application process. Please refer to points 4.6.42-4.6.63 above.	This is noted by the Applicant.
MMO 5.7.11	Given the uncertainties regarding behavioural responses and the zoning approach, MMO recommends a conservative approach be taken by the Applicant in relation to underwater noise and recommended noise abatement measures across the entire site rather than zoning.	The Applicant is confident that a suitably conservative assessment has been undertaken to establish the potential impacts from underwater noise on sensitive features. Furthermore, the Applicant would like to direct the MMO to **Appendix 11.3: Underwater noise assessment technical report, Volume 4 [APP-149]**, where the built in precautions of the noise modelling are detailed. In addition to this, the Applicant has applied significant measures of precaution when defining appropriate mitigation measures, including the modelling of minimal underwater noise attenuations afforded by each noise abatement measure.
MMO 5.7.12	For the current proposal it is the understanding of the MMO that "noise abatement will be in place for the entirety of the piling operations with additional measures [as set out below] put in place during the breeding season". Proposed Measures: No piling will occur in the piling exclusion zones during the seabream breeding period (March-July) which will be defined by the modelling in the Final Sensitive Features Mitigation Plan (C-280). However, it is our understanding that this exclusion zone will be extended (regardless) to the western part of the array (please see following point) for the majority of the black seabream breeding period (March to June). During March to June, the piling exclusion zone area will be extended to encompass the western part of the offshore Array. No piling will therefore be undertaken in the western part of the Array as shown in Figure 5-14 (Figure 3 of Annex 3). The MMO believes the proposal to extend the pilling exclusion zone to the western part of the array is reasonable. Overall, we support the more generic zoning as per Figure 5-14, rather than the small arbitrary piling exclusion zone/s. Thus, piling will only be undertaken in the eastern part of the offshore Array area, and subject to mitigation using the combination of a low noise hammer technology and DBBC. Piling in the eastern area will commence in the part of the array furthest from the Kingmere MCZ; i.e., in the south east corner, as illustrated in Figure 5-15 (Figure 4 of Annex 3). The detailed scheduling of piling locations will be determined once the layout of WTGs and substations has been finalised.	The Applicant welcomes the agreement of the MMO and can confirm that additional measures (as set out in C-280, C-281 and C-282) will be put in place during the black seabream breeding period (March-July). The Applicant can also confirm that the exclusion zone will be extended to the western part of the array for the majority of the black seabream breeding period (March to June). These measures are secured in the **In Principle Sensitive Features Mitigation Plan [APP-239]** in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**).

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Ref	MMO's Comment	Applicant's Response
MMO 5.7.14	It is not clear what the dark shaded area is in Figure 5-14 – the OWF separation zone. Please could this be made clearer.	The OWF separation zone is explained in **Chapter 4: The Proposed Development, Volume 2 [APP-045]** and shown on the **Offshore Works Plans [PEPD-004]**; two wind farm separation zones, to the west and south of Rampion 1, were introduced to mitigate visual impacts by separating the Proposed Development array area from the built Rampion 1 turbines. The area to the west of Rampion 1, is also designated as a Helicopter Refuge Area (HeRA), with the purpose of addressing the lines of sight (for search and rescue) and navigational safety concerns raised by the Marine and Coastguard Agency (MCA) during Statutory Consultation. The area to the south of Rampion 1, will also be compliant for use as a HeRA at 1nm width, but has not been designated solely for this purpose;
MMO 5.7.15	Whilst there is no requirement for a spatial zoning plan for the remainder of the year, MMO notes that the Applicant will continue to mitigate piling noise. The Applicant will propose to utilise at least one offshore piling noise mitigation technology. The MMO would reiterate that provided the Applicant commits to using noise abatement technologies which achieve the greatest amount of noise reduction, then we could support this proposal.	The applicant welcomes the MMO's comment and also refers to its response to **MMO 5.7.8**.
MMO 5.7.16	The overall approach to mitigation is somewhat reasonable, however a number of issues are still require further discussion. As set out in this Section and Section 4.6.42 - 4.6.63.	Please also refer to the Applicant's responses to reference **4.6.42 – 4.6.63**.
5.8 Offshore In Principle Monitoring Plan [APP-240]		
MMO 5.8.1	Some comments on monitoring requirements have been outlined in section 4, specifically in relation to Section 4.6 (Fish and Shellfish Ecology) of the Plan and the conclusions of no moderate or major adverse residual effects for Fish from Rampion 2. MMO will continue discussions on monitoring throughout examination and expect changes to this document.	To ensure that no residual impacts of significant adverse effect arise on ecological receptors, the Applicant has proposed several embedded mitigation measures. These are detailed in the **In Principle Sensitive Features Mitigation Plan [APP-239**] and are secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**). With the implementation of these proposed embedded mitigation measures, the Applicant is confident that there will be no moderate or major adverse residual effects on fish and shellfish receptors. Therefore, the Applicant is confident that there will be no monitoring requirements in relation to fish and shellfish ecology.
MMO 5.8.2	Please update the submission timeline to six months – due to the nature of the monitoring report 4 months is not enough time to be able to review, consult and resolve consultation issues for larger OWF such as Rampion 2. The MMO also encourages pre-engagement at the earliest stages once consented to allow for all issues to be resolved.	As the project comprises a nationally significant infrastructure project it is necessary for there to be a degree of certainty as to the programme for its delivery, particularly given the need for the project to contribute to the Government achieving its net zero target. Four months is considered an appropriate

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Ref	MMO's Comment	Applicant's Response
		period for the approval of submitted details. However, the applicant is willing to work with the MMO to identify any approvals which require a longer determination period.
MMO 5.8.3	Table 4-5 states "Validate, within reason, predictions in Chapter 11: Marine mammals, Volume 2 of the ES". MMO requests that "within reason is removed". The reason for monitoring is to ensure the impacts are within the predictions in the ES, MMO recommends the first four piles are the worst case scenario piles and that should be updated within this document.	The Applicant will endeavour to validate the predictions made within **Chapter 11: Marine mammals, Volume 2 [APP-052].** However, it is possible that the worst-case scenario applied in the assessment is not replicated in practice. The Applicant acknowledges the MMOs recommendation regarding the first four piles that are monitored being the worst-case scenario piles, however, this cannot be confirmed at this stage as the piling programme and specific ground conditions within the array area are not yet known.
5.9 Outline Fisheries Liaison and Coexistence Plan		
MMO 5.9.1	A significant impact on UK potters during the construction phase of Rampion 2 has been identified. With the commitment to the development of a Fisheries Liaison and Coexistence Plan (FLCP) that will explore mitigation options including cooperation agreements and associated payments for the UK potting fleet, the impact magnitude is reduced to minor and the residual effect is of minor adverse significance, which is Not Significant in EIA terms.	This is noted by the Applicant and an updated **Fisheries Liaison and Co-existence Plan** (FLCP) has been submitted at Deadline 1 **(document reference 7.19)**.
MMO 5.9.2	The MMO welcomes and notes that a Fisheries Liaison Officer (FLO) will be appointed, alongside a Company and Offshore FLO and a Marine Coordinator for Rampion 2.	The Applicant welcomes the support of the MMO.
MMO 5.9.3	Advice should be sought via the FLO when the timetable of works is known so that the local industry can provide real-time advice.	The Applicant notes the MMO response and the request for the FLO to engage with local industry around the timing of works. The Applicant remains committed to FLO appointment and confirms the role of the Company FLO will include engagement with local industry around timing of works, ahead of works commencing, as set out in **Section 3.2** of the **Outline Fisheries Liaison and Coexistence Plan (document reference 7.19),** which is secured in Condition 11(1)(g) of the dMLs (Schedules 11 and 12 of the **draft DCO [PEPD-009]**).

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Ref	MMO's Comment	Applicant's Response
MMO 5.9.4	MMO would note that MMO will not act as arbitrator in regard to compensation and will not be involved in discussions on the need for or amount compensation being issued. This needs to be made clear within the Outline Fisheries Liaison and Coexistence Plan.	The Applicant understands that the MMO will not act as arbitrator in any commercial negotiations with individual fishermen and this can be made clear. An updated **Fisheries Liaison and Co-existence Plan** (FLCP) has been submitted at Deadline 1 **(document reference 7.19)**.
5.10 Outline Diver Communication Plan		
MMO 5.10.1	MMO defers to the UK Health and Safety Executive on matters of diving and supports any comments raised. The MMO will continue to be part of the discussions relating to securing any conditions required within the DMLs.	The position of the MMO is acknowledged by the Applicant.
5.11 Report to Inform Appropriate Assessment		
MMO 5.11.1	The MMO defers to and supports Natural England as SNCB regarding impacts to international designated sites and the Habitats Regulation Assessment (HRA) for the Project.	The position of the MMO is acknowledged by the Applicant.
MMO 5.11.2	The MMO will keep a watching brief on these documents and would remind the Applicant that any mitigation secured through these assessments will need to be included within the conditions on the DML.	The Applicant welcomes the support of the MMO and will continue to work with the MMO to ensure mitigation is included within the conditions of the DML.
5.12 Habitats Regulations Assessment (Without Prejudice) Derogation Case		
MMO 5.12.1	The MMO defers to and supports Natural England as SNCB regarding the derogation case proposed.	The position of the MMO is acknowledged by the Applicant.
MMO 5.12.2	The MMO will keep a watching brief on these documents and would ask for any compensation requirements to be included within the DCO at this stage to ensure all parties have reviewed the wording, should the Secretary of State be minded to include compensation.	The Applicant notes the comment from MMO. Should it be required, a draft condition has been submitted by the Applicant, at Procedural Deadline A in **Alternative Schedule 17 - Revision A [PEPD-0017]**.
5.13 Draft Marine Conservation Zone Assessment		
MMO 5.13.1	The MMO defers to and supports Natural England as SNCB regarding impacts to Marine Conservation Zones for the Project.	The position of the MMO is acknowledged by the Applicant.
MMO 5.13.2	The MMO will keep a watching brief on this document and discussions in relation to MCZs and would remind the Applicant that any mitigation secured through these assessments will need to be included within the conditions on the DML.	The position of the MMO is acknowledged by the Applicant.

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5. Applicant's Response to Relevant Representations: Affected Parties

Table LI1 Applicant's Response to Albon Family [RR-006]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI1.1	No proper consultation so far. Multiple inconsistencies between different drawings and illustrations make a mockery of the democratic process. I was first notified in October 2022 only days before the end of the supposed 2-year consultation.	001	**Context** Details of the proposals in this location are shown on Sheet 33 of the **Onshore Works Plans** **[PEPD-005]**. The Land Interest's title borders an A road (the A272) which is adopted highway. The Applicant identified the Land Interest as a presumed owner of part width of the subsoil of that highway comprising plot 33/19 (as per the **Land Plans Onshore** **[PEPD-003])** (which is unregistered) and consulted with the Land Interest on that basis on 14th October 2022. Plot 33/19 is included within the Order Limits as it is required for both construction and operational access (Work Number 14) to the Oakendene substation and therefore a package of Construction and Operational Access Rights is proposed to be compulsorily acquired over this Plot. Those rights are defined in Schedule 7 to the draft **Development Consent Order (DCO)** **[PEPD-009]**. **Consultation** The Land Interests were first consulted by the Applicant on 14th October 2022, as part of the Onshore Statutory Consultation. The deadline for receipt of responses for this round of consultation was 29 November 2022 and therefore more than the statutory time period (28 days) was given to respond. The Applicant spoke with the Land Interest over the phone in May 2023 (regarding the confirmation schedules) and again via telephone and email in October 2023 where the project was discussed and the offer of a site meeting was declined. Chapter 6 of the **Consultation Report** **[APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. If the Land Interest has identified inconsistencies within the DCO application, the Applicant would be grateful if they could be informed of the details.

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Table LI2 Applicants Response to Sandra Albon [RR-339]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI2.2.1	No proper consultation has taken place. Details communicated are inconsistent and there not trustworthy.	023	**Context** Details of the proposals in this location are shown on Sheet 33 of the **Onshore Works Plans [PEPD-005]**. The Land Interest owns land to the north of the A272. The Land Interest's title borders an A road to the south (the A272) which is adopted highway. The Applicant identified the Land Interest as a presumed owner of part width of the subsoil of that highway comprising plot 33/19 (which is unregistered), as shown coloured blue on the **Land Plans Onshore [PEPD-003]**. The Land Interest was consulted on that basis on 14 October 2022. Plot 33/19 is included within the Order Limits as it is required for both construction and operational access (Work Number 14) to the Oakendene substation and therefore a package of Construction and Operational Access Rights is proposed to be compulsorily acquired over this Plot. Those rights are defined in Schedule 7 to the **draft Development Consent Order (DCO) [PEPD-009]**. The Land Interests were first consulted by the Applicant on 14th October 2022, as part of the Onshore Statutory Consultation. The deadline for receipt of responses for this round of consultation was 29 November 2022 and therefore more than the statutory time period (28 days) was given to respond. The Applicant spoke with the Land Interest over the phone in May 2023 (regarding the confirmation schedules) and again via telephone and email in October 2023 where the project was discussed and the offer of a site meeting was declined. Chapter 6 of the **Consultation Report [APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. If the Land Interest has identified inconsistencies within the DCO application, the Applicant would be grateful if they could be informed of the details.

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Table LI3 Applicant's Response to Oakendene Estate – Langlands-Pearse and Others [RR-278]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI3.1	Oakendene Estate is a mixed residential, agricultural and industrial estate located between Cowfold and Bolney in West Sussex. The property consists of Oakendene Manor a grade II listed manor house with associated historic parkland, two cottages and a coach house near the Manor, a farmhouse and cottage near the industrial estate. The Industrial Estate has developed from the agricultural buildings and supports nine local businesses. The Industrial Estate is managed by Oakendene Estates Ltd via a long lease. The surrounding agricultural land is bounded by the A272 and Kent Street. The land consists of arable pasture woodland and a feature lake in the parkland. The property extends in total to 71.95 ha (177.79 ac) ("The Property"). The proposed Scheme seeks the following rights in the draft Order: Permanent Acquisition of Land Acquisition of rights by the creation of New Rights or the imposition of Restrictive Covenants The Right for Land to be Used Temporarily.	045	This description of the land and the rights sought by the Applicant is noted and the Applicant has no comment. The following rights are required for the Proposed Development: - Cable installation works including construction and operational access to the south of the land holding coming into the Permanent Onshore Substation- Work no. 9 - Construction and operational access Work no. 14 to the south east of the substation - Construction access to the east of the substation Work no. 13 - Temporary Construction Compounds to the north of the permanent substation site and to the west of Oakendene Industrial Estate Work no. 10 - Permanent acquisition of the land is required for the permanent Onshore substation, associated infrastructure, drainage and landscaping works – (and construction) Work no. 16 - Permanent substation access from the A272 Work no. 18 - Onshore Connection Works from the permanent Substation towards Bolney Extension to the east- of the permanent Substation Work no. 19 The required permanent and temporary works on the Land Interest's land holding are shown on Sheet 33 of the **Onshore Works Plans [PEPD-005]**. Plots affected are 33/1, 33/2, 33/5, 33/7, 33/8, 33/9, 33/10,33/11,33/12, 33/13,33/14, 33/15, 33/16, 33/17, 33/21, 33/30
LI3.2	The Scheme requires land and rights set out above for the following works: • The siting of the Onshore Substation to be constructed on Plot 33/9 consisting of transformers, reactors, capacitor banks, Air Insulated Switchgear (AIS), Gas Insulated Switchgear (GIS), fire walls, reactive compensation equipment, harmonic filters, High Voltage (HV)/Medium Voltage (MV) equipment, switch room, control building, welfare facilities, environmental planting, flood alleviation measures and security fencing. It is understood that the maximum building height is 12.5m. In short an industrial complex in a countryside setting. • An access road from the substation to the A272 (Plot33/15)		This description of the Scheme is noted. The Applicant has no further comments.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	• Environmental mitigation works between the Substation and the A272 and in the Parkland next to Oakendene Manor (Plots 33/14,33/11,33/30 and 33/10) • Rights to install underground cables on land south of the substation (Plot 33/1) • A temporary work site for the construction of the substation between the substation and the A272 (Plots 33/14 and 33/16) • A temporary storage area east of the Industrial Estate (Plots 33/12 and 33/16) • The Environmental Statement indicated a construction period of 3 years		
LI3.3	20. Specific Concerns relating to the Scheme and its Construction a. Residential Amenity 21. Oakendene Manor is a substantial country house with outbuildings and ancillary accommodation. It has a parkland and views to a lake. The construction of the substation is going to have significant impacts upon the amenity of the residents in the main house and ancillary accommodation.		The Applicant notes the issues raised in this relevant representation. A number of management plans **[APP-223** to **APP-242]** have been included in the DCO Application which are secured by the DCO such as **Outline Code of Construction Practice (CoCP) [PEPD-033],** secured by Requirement 22 of the **draft Development Consent Order (DCO) [PEPD-009]**, which provide the details of the proposed embedded environmental measures to manage effects during the construction phase. The Applicant has considered potential residential amenity concerns for Oakendene Manor as follows: **Noise:** Oakendene Manor has been included in the operational noise assessment for the **Chapter 21: Noise and Vibration, Volume** 2 of the ES **[PEPD-018]** and was determined to be low impact for nighttime (equivalent to the Lowest observed adverse effect level (LOAEL)) and negligible impact during day (no observed effect level (NOEL)) for the mitigated scenario. Construction noise will be audible at this property, Table 21-32 of **Chapter 21: Noise and Vibration, Volume 2** of the ES **[PEPD-018]** details the predictions. No significant effects are predicted during construction phase, with the worst case levels being 6dB below threshold of significance during "Civils – backfilling". **Air Quality:** Dust sources relating to construction activities and the construction access roads have been considered in **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]**. The qualitative dust assessment concluded that with no mitigation in place the risk of dust soiling from construction traffic in the vicinity of Oakendene Manor is Low. This finding that without dust controls there would be a Low risk of impact has informed the dust management measures that would be implemented as part of the Project (see Table 19-36 **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]**). These measures are expected to ensure that the risk of impact is reduced to negligible levels These measures have informed the **Outline Code of Construction Practice**

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			(CoCP) **[PEPD-033]** and are secured via Requirement 22 of the **draft Development Consent Order (DCO)** **[PEPD-009]**. **LVIA:** A Residential Visual Amenity Assessment (RVAA) has been reported in **Appendix 18.5: Residential Visual Amenity Assessment, Volume 4** of the ES **[APP 171]**. Significant visual effects on the views from the property are reported, although these are not considered likely to affect residential visual amenity. The Applicant is in the process of arranging a site visit to confirm this assessment. **Health:** As stated in **Chapter 28: Population and human health**, **Volume 2** of the ES **[APP-069]**, while changes in air quality during construction of the Oakendene substation would not cause exceedance of air quality objective thresholds, a quantitative assessment was undertaken to better understand the potential human health effects. The results show that there would not be any measurable change in health outcomes. Changes in the noise environment would remain below the LOAEL during the night time and below the NOEL during the daytime. On this basis, the changes in noise exposure would not be sufficient to quantify any measurable impact on population health outcomes during the construction phase.
LI3.4	b. Effect on the Listed Building and Historic Parkland The Manor and its surrounding land is of historical and cultural importance. The building was listed in 1980 and is Grade 2. There is a diminution in the setting of the building which is detrimental to its status as an historic building and its capital value.		A historic landscape assessment of the historic parkland at Oakendene was undertaken, which is presented in **Appendix 25.5: Oakendene parkland historic landscape assessment, Volume 4** of the ES **[APP-211]**. This exercise informed the design process and the assessment of effects for the parkland and listed building presented in **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**. The assessment of effects on settings during the construction and operation phases considered relevant factors including views, changing land use and noise (for example during the construction phase). The design principles identified to reduce and minimise the impact on the setting of Oakendene Manor are secured in the **Design and Access Statement (DAS)** **[AS-003]** and further expanded on in the **Outline Landscape and Environmental Mitigation Plan (LEMP)** **[APP-232]**.The detailed design of the onshore substation must be undertaken in accordance with these design principles and provided for approval of the planning authority as per the requirements of the **draft Development Consent Order (DCO)** **[PEPD-009]** including Requirement 8 (2) which states that the design for approval, "must accord with the principles set out in the relevant part of the design and access statement". Requirement 12 (3) also requires accordance with the **DAS** **[AS-003]** for provision of the landscaping details for the onshore substation.
LI3.5	c. Visual Impact		As described in **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059],** the LVIA study area for the Oakendene substation has been subject to detailed desk and site-

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	The amenity and effect on the listed building will, following construction, be mainly visual. The substation will be visible from the curtilage of the house imposing an urban/industrial view upon one which was once wholly rural and agricultural.		based assessment as well as consultation on viewpoint location. The site is partly screened by existing mature vegetation and the design process focuses on protecting and enhancing this existing screening. The assessment includes five viewpoints, however a new request for access is being sought so that the views from the property can be added to the assessment. There is a practical difficulty in positioning viewpoints too close to a development to the extent that they cannot be viewed in their landscape context and the whole of the image would be taken up by a close-range image of development which cannot be modelled at a detailed level and would extend beyond the confirms of the image. Receptors this close to development obviously have a high magnitude of change and that is reported in **Chapter 18: Landscape and Visual Impacts, Volume 2** of the ES **[APP-059]** where this occurs. Viewpoints at further distance are considered more useful in that they help to define the outer geographical extent of significant effects. The Indicative Landscape Design for the Oakendene Substation and its design principles are set out in the **DAS** **[AS-003]** and further expanded on in the **Outline LEMP** **[APP-232]**.
LI3.6	d. Construction Implications During construction there are going to be significant detrimental affects upon the remaining property, its residential and other occupiers. Noise, dust and vibration are all of significant concern. Security of the remaining property will be a concern during construction with a significant workforce located close to the residential property. Nuisance to the estate residence could become a problem. Furthermore, a significant worksite is likely to encourage and attract criminal activity, particularly theft, which increases the threat to the remaining Property		The Applicant notes the issues raised in this relevant representation. Construction impact matters provided within this Relevant Representations have been addressed in the Applicant's response to reference LI3.3. Further information on the assessment of general construction impacts can be found in **Table 6.2 'Environment and disturbance'** below. The Applicant can confirm that appropriate security will be provided at the permanent substation site. Section 4.6 of the **Outline Code of Construction Practice** **[PEPD-033]** provides details for site security, screening and fencing, and is secured by Requirement 22 in the **Draft DCO** **[PEPD-010]**.
LI3.7	e. Construction Traffic The construction of the substation and the underground cable will increase markedly the traffic on the A272. As there are temporary sites both east and west of the Manor there is going to be a significant increase in both light and heavy traffic on the road north of the Manor.		As part of the DCO process, a thorough assessment of the likely impact of traffic upon the local road network and highway assets during the construction phase of works has been completed (see **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**). Traffic volumes on the A272 have been observed and presented in **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES (**Document reference: 6.2.32**) (submitted at Examination Deadline 1). The Applicant has provided further information has been provided in **Table 6-2 'Traffic'** (below). At peak construction, taking account of the construction traffic routing contained within the **Outline Construction Traffic management Plan (CTMP)** **[PEDP-035a]**, the following impacts have been identified on the A272: • A272 Bolney Road east of Cowfold village centre (Receptor E): ▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 5.5% and 3-4 HGVs per hour. ▸ A total construction traffic peak week increase of 19 HGVs and 147 LGVs (12-13 per hour), equivalent to a 0.8% increase in total traffic flow.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			At peak construction activity Access-62 (Oakendene Compound) will cater for 326 HGV two-way movements and 456 LGV two-way movements across a one week period. This is the equivalent of 156 construction traffic two-way movements per day or 13 per hour (approximately six entering and six exiting the compound). At peak construction activity Access-63 (Oakendene Substation) will cater for 326 HGV two-way movements and 564 LGV two-way movements across a one week period. This is the equivalent of 178 construction traffic two-way movements per day or 14-15 per hour (approximately seven entering and seven exiting the access junction). Based on these construction traffic flows and the ES that the Proposed Development will not generate any significant effects on the A272 The proposed routing strategy is further detailed in the **Outline "CTMP [PEPD-035]**. The CTMP would be secured by Requirement 24 of the **draft Development Consent Order (DCO) [PEPD-009]**.
LI3.8	f. Working times and light pollution There is concern with regard to the working hours on the substation site and the disturbance after dark and at weekends. As the substation site is visible from the Manor working lights are of particular concern.		The Applicant acknowledges this request for a change in working hours and has updated C-22 of the **Commitments Register [APP-254]** at Examination Deadline 1 to include the use of shoulder hours. This will also be updated and secured in the **Outline Code of Construction Practice (CoCP) [PEPD-033]** at the next submission of this document. Section 4.5 of the **Outline Code of Construction Practice (CoCP)** [PEPD-033] details the measures that will be implemented to manage the impact of construction lighting, including considerate positioning and directing. Construction will be limited to core working hours outlined in Section 4.4 of the **Outline CoCP [PEPD-033]** to limit the need for artificial lighting. At specific locations where continuous working is required (such as trenchless crossings), or in poor light conditions, directional lighting will be used where necessary to ensure safety and security, and secured by Requirement 22 in the **Draft DCO [PEPD-009]**.
LI3.9	g. Effect on the Industrial Estate The Estate has developed a successful Industrial Estate catering mainly for small to medium sized local businesses. The estate's income is dependant upon the rent paid for the premises by successful business operators. There is concern that the traffic and construction in general will cause difficulties to the tenant businesses on the estate. The difficulty is particularly acute as the proposal for Rampion's cable storage is to share the main access to the estate. Proper measures need to be put in place to ensure that Rampion's access to the Property does not impede the access or use of the Industrial Estate.		Access to the construction compound site via the Industrial Estate entrance from the A272 and access management measures will be designed taking into account the existing use of the road. Continued access use by Industrial Estate tenants will be facilitated. As part of the DCO process a thorough assessment of the likely impact of traffic upon the local road network and highway assets during the construction phase of works has been completed. Traffic volumes effects on the Oakendene Industrial Estate have been observed and presented in the **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**. Further information has been provided in **Table 6-1 'Traffic'** below and in the Applicant's response to reference LI3.7 (above). The proposed routing strategy is further detailed in the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035]**. The CTMP would be secured by Requirement 24 of the **draft Development Consent Order (DCO) [PEPD-009]**.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			Matters relating to construction practices and project commitments that are raised within this Relevant Representation have been covered in **Table 6.2 'Environment and disturbance'** (below). The Applicant will work collaboratively with the Estate to put in place an appropriate access management plan.
LI3.10	Compulsory Acquisition of Land The owners and occupiers of the Property are fundamentally opposed to the acquisition of their land under compulsory purchase. The estate has been in communication with Rampion over the last 4 years. The Estate has been engaged with Rampion in more detailed negotiation in recent months, however this negotiation is yet to be concluded. It is the Estate's view that a negotiated land agreement can be reached, and therefore we consider that Compulsory Purchase Powers should not be granted for the plots identified above. Furthermore, there is concern that the negotiation clock has been "run down" to this point where Rampion has the additional negotiating leaver of Compulsory Purchase via the DCO. It is considered that such an approach, intentional or otherwise, should not result in a beneficial negotiating position to landowner's disadvantage		Since the Land Interest's Relevant Representation was submitted, the Applicant and the Land Interest have exchanged contracts for the leases of and rights in land, required at Oakendene for the substation and associated construction works.

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Table LI4 Applicant's Response to South Coast Nursing Homes Ltd [RR-357]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI4.1	I run a Dementia Care Home for 55 vulnerable dementia patients (REDACTED) – the works are close to the southern boundary of my property. I need assurances; 1. There will be no noise impact during the trenching works – the patients in our care are sensitive to this and have the right to a peaceful stay/end of life 2. There will be no amenity impact, 3. There will be no Business impact.	005	Details of the proposals as they affect the Land Interest are shown on Sheet 34 of the **Onshore Works Plans** **[PEPD-005]**. The Land Interest owns and operates a residential care home which is situated to the north of the onshore connection works route (Works No.19). The Land Interest owns the driveway to the care home, part of which (Plots 34/9, 34/10 and 34/12 as shown coloured blue on the **Land Plans Onshore** **[PEPD-003])**, is included within the Order Limits as it is required for operational access (Works No.15) to the proposed cable route. Therefore, a package of Operational Access Rights is proposed to be compulsorily acquired over these Plots. Those rights are defined in Schedule 7 to **the draft Development Consent Order (DCO)** **[PEPD-009]**. The Land Interest has signed Heads of Terms in relation to the use of the care home driveway as an operational access for the project. Whilst the cable installation works do not go through the Land Interest's land, it runs 80-100m south and west of the care home grounds and therefore cable installation works (Works No.9) are proposed to take place in proximity to the care home grounds. The Land Interest's land is within the study area for the**–Appendix 28.3 Equality Impact Assessment (EqIA), Volume 4** of the Environmental Statement **[APP-221]**, as shown on Figure 1,1. The Applicant understands that the Land Interest has concerns relating to construction works impacts for the Rampion 2 cable installation and these will be considered as part of the accommodation works in this location. **1: Noise Impacts** Matters relating to construction practices and project commitments are raised within this Relevant Representation have been covered in **Table MPB2 'Environment and disturbance'** (below). Section 5.4 of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** outlines the environmental measures which will be deployed at trenching locations to mitigate for potential impacts from noise. This includes use of acoustic shrouds fitting to drills and acoustic panelling. A Noise and Vibration Management Plan will be produced to secure the mitigation necessary at specific areas of work. This will be approved by the local authority before works can commence. Eastridge Manor care home is identified as a specific sensitive receptor for consideration within **Appendix 28.3: EqIA, Volume 4** of the ES **[APP-221]** (it is the residential institution nursing home referred to in paragraph 1.4.2, and shown in Figure 1-1). There is the potential for changes in the daytime and night-time noise environment at Eastridge Manor care home from trenchless crossing location TC29 where the drilling duration is 2.3 weeks. **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]** assesses the potential noise impact at Eastridge Lodge, which has the same postcode as Eastridge Manor care home and is therefore representative of noise impact at the care home. Noise assessment results show that the predicted unmitigated noise level during the daytime (refer to Table 21-29 of **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]**) at Eastridge Lodge remain below the threshold noise level which is set to be protective of the environment and health, and the associated magnitude of change reported as "very low" on this basis.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			During the night-time period at Eastridge Lodge, the predicted unmitigated noise level (refer to Table 21-30 of **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]**)) exceeds the threshold noise level by just 1 dB, and the associated magnitude of change reported as "low". It should be noted that this is the unmitigated impact and so there is potential to mitigate night time noise further (refer to Table 21-31 of **Chapter 21: Noise and vibration, Volume 2** of the ES **[APP-062]**). Furthermore, the temporary and transient nature of drilling activities ultimately limits the potential for health and wellbeing effects which to occur would ordinarily require long-term exposure to changes in the noise environment, even in more sensitive individuals such as elderly residents (including those suffering with dementia). Overall, while it is acknowledged that residents of the care home are more sensitive to changes in the noise environment, for the reasons described above, the trenchless crossing activities would not result in any differential or disproportionate impact on residents. As a result, no equality impact was identified. **2: Visual Amenity Impact** Eastridge Farm / Manor is included in Table 1.1 of **Appendix 18.5: Residential Visual Amenity Assessment, Volume 4** of the (ES) **[APP-171]**. The assessment notes that this group of properties would be located approximately 80-100m east and north of the onshore cable corridor and that potential views of the construction activities would be screened by successive layers of mature vegetation and trees. Whilst some visibility cannot be ruled out, particularly in the winter months, the effects will not be significant and will therefore not compromise the residential visual amenity. **3: Amenity Impact from Noise** Eastridge Manor includes outdoor spaces with seating areas and paths for residents to enjoy during the day time. However, as previously stated, noise assessment results show that the predicted unmitigated noise level during the daytime (refer to Table 21-29 **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]**) at Eastridge Lodge (representative of Eastridge Manor) would be temporary and transient in nature, and would remain below the threshold noise level which is set to be protective of the environment and health; the associated magnitude of change reported as "very low" on this basis. As previously stated, while it is acknowledged that residents of the care home are more sensitive to changes in the noise environment, for the reasons described above, the trenchless crossing activities would not result in any differential or disproportionate impact on residents. As a result, no equality impact was identified. Landscape and visual impacts and noise impacts, including amenity matters provided within this Relevant Representation, have been addressed further in **Table 6.2 'Environment and disturbance'** (below). **Chapter 28: Population and human health, Volume 2** of the ES **[APP-069]** and **Appendix 28.1: Human health baseline, Volume 4** of the ES **[APP-219]** assessed the potential impacts for population and human health. The sensitive receptors included within this assessment remain consistent with those identified within the other aspect chapter (such as Noise) and a further exercise was undertaken to identify specific vulnerable receptors. The assessment concluded that the magnitude of impact on human health from potential changes to air quality, noise and vibration exposure, transport nature and flow rate, visual amenity,

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			access to opportunities for physical activity, and socio-economic factors as a result of the Proposed Development is negligible, which is not significant in EIA terms. **3: Mitigation and Compensation** The Applicant will seek to engage further with the Land Interest regarding detailed construction access design and accommodation works in accordance with **Outline Code of Construction Practice [PEPD-033]**. However, if the business operated by the Land Interest incurs financial losses that can be shown to be caused as a direct consequence of the temporary use of the land and construction works, claims for compensation will be assessed and considered in accordance with the provisions of the Compulsory Purchase Compensation Code.

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Table LI5 Applicant's Response to Washington Recreation Ground Charity [RR 414]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI5.1	Washington Parish Council as Trustee of the Washington Recreation Ground Charity, requests to be registered as an Interested Party in the examination of the Rampion 2 Offshore Wind Farm application. The Charity has a LAND INTEREST in the proposed cable route which affects the Washington Recreation Ground and Allotment Land. Both are protected Green Spaces in the made Storrington & Sullington and Washington Neighbourhood Plan, and registered Community Assets. This registration is without prejudice to the Parish Council's separate registration as an Interested Party representing the local community in the Washington Parish. As Trustee, we intend to raise similar points to those raised by the Parish Council about the impact of the proposed cabling works in respect of our land.	006	The Applicant understands that the Charity manages the use of the recreation ground but does not own the land itself. The Council, in its capacity as Trustee of the charity, notified the Applicant in November 2023 of its involvement, and the Applicant has therefore included them in the **Book of Reference** **[APP-026]** as an occupier. Details of the onshore cable route as it passes through this area are shown on Sheet 22 of the **Onshore Works Plans** **[PEPD-005]**. The recreation ground is affected by the proposed cable route (Works No.9 – cable installation works (including construction and operational access), for which cable rights and a restrictive covenant are required. However, trenchless crossing is the proposed construction methodology in this location. As the works to install the cable under the recreation ground will be undertaken by trenchless methods, the use of the recreation ground will be unaffected by the construction works, the operation of the cable or the restrictive covenant. The Applicant has been in regular correspondence with the Parish Council since February 2021, in its capacity as an owner of the recreation ground and as a stakeholder (Please see the Relevant Representation submitted by Washington Parish Council **[RR-413]**). To date, the Applicant has not received details of the concerns that the charity has but understand from the RR that these are likely to be the same as those raised by the Council as a landowner in **RR-413**, to which a response has been provided. On 20 February 2024, the Parish Council confirmed they are willing to progress discussions on the Heads of Terms and reach an agreement on land access. The Council as a Land Interest has confirmed that this is on a without prejudice basis to Washington Parish Council's stated objection to the cable route.

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Table LI6 Applicant's Response to Glenda Coralie Ayliffe [RR-134]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI6.1	I am very concerned about the proposed access route using Long Furlong Lane, a busy single-track road with few passing places, which is used by residents, local rural businesses and their customers, and riders of many horses kept nearby. I also need to understand the exact cable route north of Myrtlegrove, for which the map enclosed with Rampion's letter of 18th September 2023 is totally inadequate	007	Details of the operational access cable route as it passes along Long Furlong Lane are shown on Sheet 12 of the **Onshore Works Plans [PEPD-005]**. Details of the onshore cable route as it passes through Myrtlegrove are shown on Sheets 11,12 and 13 of the **Onshore Works Plans [PEPD-005]** The Land Interest owns a residential property which benefits from access rights over Long Furlong Lane (comprising Plot 12/13 as shown in blue on the **Land Plans Onshore [PEPD-003])**, which leads to their residential property. Long Furlong Lane is included within the Order Limits as it is required for operational access (Works No.15). Therefore, Operational Access rights are sought over Long Furlong Lane which are defined in Schedule 7 to the **Draft Development Consent Order (DCO) [PEPD-009]**. The access route along Long Furlong Lane is to be used as an operational access only as shown on Sheet 12 of the **Onshore Works Plans [PEDP-005]** therefore causing minimal disturbance to users. As detailed in Section 4.8 of **Chapter 4: The Proposed Development [APP-045],** maintenance of the onshore cable is expected to be minimal. During operation and maintenance, periodic testing of the cable is likely to be required (every two to five years). This will require access to the link boxes at defined inspection points along the onshore cable route. Unscheduled maintenance or emergency repair visits will typically involve attendance by up to three light vehicles, such as vans, in a day at any one location. Infrequently, equipment may be required to be replaced, then the use of an occasional HGV may be utilised, depending on the nature of the repair.

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Table LI7 Applicant's Response to Rodger Hector Ayliffe [RR-325]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI7.1	Concern regarding using Long Furlong Lane as an access, this is a very narrow lane used by residents, commercial vehicles based at the Myrtlegrove Estate complex, horse riders, cyclists and walkers. I trust careful consideration has been given bearing my comments now, and in the past, in mind	008	Please refer to the Applicant's response to reference **LI6.1** above.

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Table LI8 NOT IN USE

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Table LI9 Applicant's Response to the Turok Family [RR-405] and Frederik Turok [RR-125]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI9.1	I object to the Rampion 2 project here is a summary of the key reasons The significant negative impact the construction traffic will have on the A272 and Kent street on residents Kent street is a single track lane unable to handle construction lorry's At least 5 years of disruption to residents including access to our homes, significant value reduction to our properties ,wild life and vegetation destruction Not enough research has gone into the project and the consultation process has been fundamentally flawed and completely inadequate with much better options available residents have had very little input or consultation With all the HGV traffic and works construction quality of life for all residents lives will be disastrous.	010 and 027	**Context** Details of the construction access as it passes along Kent Street are shown on Sheet 33 of the **Onshore Works Plans** **[PEPD-005]**. The Land Interest owns a property to the east of Kent Street and has a presumed ownership of subsoil/ part width of highway abutting the eastern edge of the highway along Kent Street. This is shown within the **Land Plans Onshore** **[PEPD-003]** as Plot 33/4. There is a proposed construction access (Works No.13 – Temporary construction access) that affects part of the existing road, for which Construction Access Rights are sought, over a proportion of Kent Street. **Consultation & Engagement** The Applicant first consulted with the Land Interest in July 2021, and contacted the Applicant in response to the second Statutory Consultation in October 2022. Chapter 6 of the **Consultation Report** **[APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. **Compensation** If Compulsory Purchase Powers are used, affected Land Interests will be compensated in accordance with the provisions of the Compensation Code. **Traffic Impacts** The **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** outlines the environmental measures which will be deployed during construction, including to mitigate traffic impacts. Please see the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035]** for further details. The CTMP would be secured by Requirement 24 of the **draft Development Consent Order (DCO)** **[PEPD-009]**. The likely significant transport effects associated with the construction phase of the Proposed Development have been assessed in **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**, **Chapter 32: ES Addendum, Volume 2** of the ES (**Document reference: 6.2.32**) (submitted at Examination Deadline 1) and **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[APP-197]** which has been updated at the Examination Deadline 1 submission. At peak construction, taking account of the construction traffic routing contained within the **Outline CTMP** **[PEPD-035a]** which has been updated at the Examination Deadline 1 submission, no significant effects have been identified for the A272.

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At peak construction at this location approximately 274 heavy goods vehicles (HGV) will use Kent Street in one week, equivalent to 55 HGVs per day or 4-5 per hour. This peak construction traffic flow, as detailed in Table 2.4.57 of the **Chapter 32: ES Addendum, Volume 2** of the ES (**Document reference: 6.2.32**) (submitted at Examination Deadline 1), is related to construction access A-64, which is located 200m south of the junction with the A272. The peak construction traffic flow associated with Access A-64, located 700m south of the A272, however is much lower than A-64 with a total construction traffic peak of 31 vehicles per day and an HGV peak of 28 vehicles per day or 2-3 HGVs per hour.

Construction traffic will need to use Kent Street for approximately 38 weeks of the construction programme although it is noted that this will not be continuous. There are multiple peaks in construction traffic for access A-61 and A-64, associated with different construction activities that include haul road construction, cable trenching, duct laying, backfilling, HDD activities, cable pulling and haul road reinstatement. Whilst the peak week of construction traffic is predicted to lead to a significant environmental effect (as identified in the **Chapter 32: ES Addendum, Volume 2** of the ES (**Document reference: 6.2.32**) (submitted at Examination Deadline 1) this peak lasts for only approximately two weeks of the construction programme. In between peaks the traffic flows will be minimal per day. For example, it is outside of these peak periods, it is predicted HGV flows will be more than 10 vehicles per day (one per hour) for only 13 weeks of the construction programme.

It should be noted that both access A-61 and A-64 are located north of residential properties on Kent Street and therefore construction traffic will not route past these properties. This reflects commitment C-157 (**Commitment Register** **[APP-254]**) which states that HGVs should avoid smaller settlements where possible, the prescribed local access routes defined in Table 5-1 of the **Outline CTMP** **[PEPD-035a]** and the mitigation identified to avoid the use of small single-track roads as much as possible as defined in Table 5-2 of the **Outline CTMP** **[PEPD-035a]**.

For clarification, the Applicant would like to note that **Outline CTMP** **[PEPD-035a]** Figure 7.6.6c showing local access routes, Figure 7.6.9c showing routes from compounds to sites and Figure 7.6.13c showing light goods vehicle (LGV) construction access routes are inconsistent and incorrect in relation to use of Kent Street south of the accesses A-61 and A-64. These plans have been updated and submitted as part of an update to the **Outline CTMP** **[PEPD-035a]** at the Examination Deadline 1 submission to reflect that construction traffic will not use Kent Street south of access A-61 and A-64.

Given the single lane track nature of Kent Street, the Applicant is currently reviewing options for the implementation of traffic management along Kent Street and accesses A-61 and A-64 to provide safe access for construction and general traffic. This may involve measures such the implementation of a speed limit reduction, passing places, or managed access via banksmen.

The outcomes of this review will be discussed with West Sussex County Council at the earliest opportunity with the aim of reaching an agreement in principle to the traffic

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management strategy. This would then be secured through a detailed CTMP for the stage of the authorised development comprising Kent Street which will be required to be submitted and approved by the highways authority before commencement within that stage in accordance with requirement 24(1)(a) of the **Draft DCO** **[PEPD-009]**.

Environmental & Ecological Considerations

The Applicant notes the issues raised in this relevant represethe Applicant's responsntation. Terrestrial ecology and nature conservation matters provided within this Relevant Representations have been addressed in the Applicant's response in **Table 6.2 'Environment and disturbance'** (below), with further information provided in the Applicant's response in **Table 6.3 'Ecology'** (below).

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Table LI11 NOT IN USE

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Table LI12 Applicants Response to Richard Jonathan Clifford [RR-311]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI12.1	I am very angry that the planning process has got this far. There was no consultation and I actually heard about the project from my daughter who lives about 5 miles from here. Apart from the aesthetics and health risks of living opposite this proposal there is the added destruction of hedges, trees and wild life and moreover the chaos that will be caused by Plant traffic for years to come on an already congested A272. the jams and tailbacks are a daily occurrence at the moment without adding site traffic lights and HGVs. Kent street has strict width access (with signage at both ends) and the council have used this to stop planning applications for change of use for weddings etc and they were refused on the grounds that the road was''t wide enough for extra traffic and now here we have Rampion changing the rules and suddenly any vehicle, any width they choose can access the road. Apart from these points the whole project will impact my business and clients will not be able to visit, my staff will always be late and not be able to go back and forth to the Oakendene Industrial Estate where my company is run from and also on a selfish level my home will depreciate in value being opposite this eyesore. Why can this substation not be built next to Rampion 1? All of the offshore cables go there already and environmentally the damage there has already been done	087	**Context** The Applicant understands that Mr Clifford is the occupier of a unit at Oakendene Industrial Estate and lives to the north of the A272. The Applicant understands that occupiers of Industrial Estate units at Oakendene benefit from a right of access over the access road into Oakendene Industrial Estate. This access road is also proposed to be used for the Proposed Development (Plot 33/13) as shown on Sheet 33 of the **Land Plans Onshore [PEPD-003]**. Temporary rights are required for modifying and using the access as a Construction Access for the cable construction compound (Work no. 13) as shown on Sheet 33 of the **Onshore Works Plans [PEPD-005]**. **Consultation and Engagement** As noted in paragraphs 6.3.3 and 6.3.4 of the **Consultation Report [APP-027]**, consultation packs were delivered to the Oakendene Industrial Estate office and the Applicant subsequently visited the Oakendene Industrial Estate on two occasions in November 2022 to issue packs. The Applicant also left spare, unaddressed packs in the Oakendene Industrial Estate office in case any occupiers had misplaced their packs. The Applicant is in the process of seeking confirmation of the nature of the affected person's land interest and when his occupation of a unit at Oakendene Industrial Estate commenced. The Applicant confirms that it will update the **Book of Reference [APP-026]** accordingly. Access to the construction compound site via the Industrial Estate entrance from the A272 and access management measures will be designed taking into account the existing use of the road. Continued access use by Industrial Estate tenants will be facilitated. The Applicant notes the issues raised in this relevant representation. Construction impacts and project commitments matters provided within this Relevant Representations have been addressed in the Applicant's response in **Table 6.2 'Environment and disturbance'** (below). The Applicant will work with the Estate to put in place an appropriate access management plan. Please refer to the Applicant's response to reference **LI9.1** (above) for traffic and transport comments.

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Table LI13 Applicants Response to Gateley Hamer Limited on behalf of Stonegate Group/Unique Pub Properties Ltd [RR-368]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI13.1	I am unable to advise at this stage as the Applican''s representative has not yet responded to my suggestion of a meeting to discuss exactly why the Applicant needs CA/TP powers over plots 27/13 and 27/14. The suggestion is that it is for trimming a hedge for construction traffic highway visibility but there is some uncertainty over this statement that needs to be confirmed. It is also my view that this should be done (if that is the purpose of including the land in the DCO) via a licence agreement rather than including the land in the DCO but no meaningful engagement has taken place yet.	012	**Context and Voluntary Agreement** Details of the proposals as they pass through the Land interest's land holding are shown on Sheet 27 of the **Onshore Works Plans [PEPD-005]**. The Land Interest owns a pub, pub garden and car park that borders the B2135 to the east. A sliver of the vegetated area on the western border of the title is included within the Order Limits for temporary construction access (Works No. 13 – Temporary construction access), for which construction access rights are sought. The area comprises Plots 27/13, 27/14 as shown coloured blue on the **Land Plans Onshore [PEPD-003]**. Whilst no engineering works are required over this Plot, however, maintenance of visibility from the construction access A-48 is required for highway safety reasons. The freehold owner has expressed a preference for a voluntary agreement. **Traffic Considerations** As detailed within the **Outline Construction Traffic Management Plan (CTMP) [PEDP-035a]** all temporary construction accesses will be designed to follow design standards contained within the Design Manual for Roads and Bridges and to meet relevant West Sussex County Council requirements. This includes the provision of appropriate visibility splays to allow safe access by construction traffic. However, as the visibility splay requirement for a 30mph speed limit is 90m and the Fountain Public House is located approximately 100m south of construction access A-48, it is not expected that hedge trimming will be required at this location. Detailed design of these accesses will form part of stage-specific CTMP secured pursuant to requirement 24(1)(a) of the **Draft Development Consent Order (DCO) [PEPD-009]**. Matters relating to construction practices and project commitments that are raised within this Relevant Representation have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'** (below).

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Table LI14 Applicant's Response to Tim Facer [RR-398]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI14.1	I am opposed to the project. The cable route will go through most of the fields on my farm. I have asked RWE on numerous occasions for copies of the surveys undertaken on my farm but have never received these. RWE have yet to confirm the exact cable route through my farm. I have asked RWE about magnetic fields/heat from the cables but have had no answers.	013	**Context** The Applicant has been in regular correspondence with the Land Interest and their agent since April 2021. Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 31 and 32 of the **Onshore Works Plans [PEPD-005]**. The Land Interest owns a farm situated to the east of the A281 and the west of Cowfold stream that the Applicant understands is not actively in agricultural use other than for haylage. A proportion of the pasture land is affected by the proposed cable route, shown as (Works No. 9) on the **Onshore Works Plans [PEPD-005]**, for which a package of Cable Rights and a Cable Restrictive covenant are sought. The area of the pasture land affected comprises Plots 31/4 and 32/1 as shown coloured in blue on the **Land Plans Onshore [PEPD-003]**. Two of the Land Interest's fields are affected by a proposed operational access (Works No. 15), for which operational access rights are sought to access the cable route. These areas comprise Plots 31/5, 31/6, as shown coloured blue in the **Land Plans Onshore [PEPD-003]**. The Land Interest's driveway is also included within the Order Limits as a proposed operational access (Works No.15). The Land Interest owns the eastern section of the driveway to Crateman's Farm, therefore encompassing Plots 31/7 and part of Plot 31/6. In addition, there is a proposed construction and operational access area (Works No. 14) which extends further to the west of the farm, for which construction and operational access rights are sought. The area of the farm affected by Works No.14 comprises Plot 31/3 and 31/5. **Route Amendments** The cable route has been amended in this location to take it further to the East of the farm and away from the residential property, to minimise disruption as much as possible. The original PEIR boundary included a greater proportion of the farm within it compared to the current Proposed DCO Order Limits, which were reduced prior to submission. The Land Interest originally requested that the route was moved to the far eastern border of the farm. However, there were environmental constraints associated with this route proposal which have been explained in detail to the Land Interest via email on 14 November 2022 and in the Letter dated 17 October 2023. The letter is appended in **Appendix 10: Letter to Tim Facer 17.10.23**. Further information regarding route alternatives have been provided by the Applicant in **Table 6.4 'Route / Alternatives'** (below). **Impacts and Mitigation on Agricultural Uses**

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			While the Applicant has yet to confirm the exact location of the final 40m construction corridor, numerous site meetings have been held to explain the proposals on the Land Interest's ownership. As per the **Onshore Works Plans** **[PEPD-005]**, the cable installation works (including construction and operational access) (Works no.9) extends across a proportion of the farm from north to south, impacting six fields (of a total of nine fields). Additional width is required within the Order Limits for Works No.14 (Construction and operational access) to facilitate a haul road to run c. 100m west of the main cable corridor in order to utilise an existing gap in the hedge and avoid important hedgerow loss. As the project progresses to the point of entry being taken for construction, the Applicant is keen to have ongoing discussions with the Land Interest to understand how best to mitigate any temporary severance of land during the construction period, which can include temporary accommodation works (e.g. fences, gates and crossing points). In this location, the temporary cable installation area runs through the centre of the pasture land. The Applicant will continue to engage further to understand the Land Interest's specific requirements to accommodate the haylage/ farm management operations and minimise disturbance wherever possible. This could include crossing points to be agreed with the Land Interest across cable installation area (Works No.9) and the construction and operational access area (Works No.14) to ensure parts of the field will remain available for use. Detailed cable routeing will be refined further to pre-construction surveys. **Order Limits** As detailed above, land owned by the Land Interest is required for construction and operation of the permanent cable easement (Works No.9) for which a package of Cable Rights and a Cable Restrictive covenant are sought. The land is required to be included in the Applicant's DCO at this stage to ensure that all required rights for construction and operation are secured. If a voluntary land agreement is secured within the Land Interest compulsory acquisition may not be required. As explained by the Applicant in the **Statement of Reasons** (paragraphs 9.11.7-9.11.9) **[PEPD-012]**, not all of the land owned by the Land Interest within the Order Limits will need to be permanently acquired. Flexibility is sought to enable the construction of works anywhere within the area identified for those works on the **Onshore Works Plans** **[PEPD-005]**, within which area there will be a circa 40m construction corridor and 20m permanent easement corridor, save for in certain circumstances such as where HDD techniques are employed. The final routing is not fixed and will be dependent upon matters such as pre-construction surveys. As explained in the paragraphs in the **Statement of Reasons** **[PEPD-012]**, the Applicant will seek the minimise the extent of permanent rights required by taking temporary possession first of the wider construction corridor and then permanently acquiring the rights required over the narrower area when the location is known. The Applicant seeks to negotiate rights for an easement to lay a cable within the proposed Order Limits. The easement will be finalised taking no greater area than required. An indicative cable route alignment has been shown by a blue line on the Heads of Terms plan which was provided to the Land Interest in March 2023. The Applicant welcomes the Land Interest's willingness to discuss matters further and confirms that it will engage further with the Land Interest regarding the refinement of the final land area and

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			appropriate and reasonable mitigation measures during construction of the project to minimise disturbance to the Land Interest. **Survey Results** In a Letter to Mr Facer dated 17 October 2023 (see **Appendix 10 Letter to Tim Facer 17.10.23**), the Applicant provided a link to the ES and explained the following: *"As you are aware the cable route is over 40km long and survey data is largely digitised for the whole stretch. The Preliminary Environmental Information Report (PEIR) and supplementary report set out information on surveys carried out and findings, for example, relating to habitats and protected species along the cable route. This information has now been taken from raw survey data, drawn together and analysed by our EIA consultants. and the most up to date results presented in the Environmental Statement (ES) in accordance with the relevant guidance and legislation from organisations such as Natural England. This ES has been submitted with the DCO application material which is available to view at* https://www.gov.uk/government/organisations/planning-inspectorate. *Rampion 2 has been advised by its environmental consultant that forwarding the raw data is unlikely to be informative, however, we would be happy to provide information from the ES relevant to specific survey areas of interest which you have."* **Heat from the Cables** The Applicant wrote to Mr and Mrs Facer on 17 October 2023 and confirmed that the cables are proposed to be buried at least 1.2m below ground level. The Applicant wrote "*A vertical separation between the cables and the water supply will be applied to ensure the water supply is not subject to a material rise in temperature when compared with natural rises and drops in ground temperatures. An increased risk of legionella caused by the cable installation is therefore not expected.* The above was communicated again on the subsequent site visit in December 2023. **Electro Magnetic Fields** The potential health impacts from exposure to electric and magnetic fields are assessed in **Chapter 28: Population and health, Volume 2** of the ES **[APP-069]**. As the proposed transmission infrastructure is buried underground, there is no potential for exposure to electromagnetic fields.

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			Results of the electric and magnetic field assessment show that the maximum calculated magnetic field strength associated with the 275 kV and 400 kV cables would be 19.9 µT and 13.7 µT, respectively. This is well below the 360 µT public exposure guideline limit set to protect health.
LI14.2	The water main to my house will be crossed by the cable. My property is the last one supplied by this main and I have, on numerous occasions both in writing and verbally, expressed my concern about Legionella developing when the cable generates heat close to the main. I have requested that a new water main be put in from the A281 to my property to avoid any contamination from the cable. Again RWE have failed to address my concerns. The majority of my farm will be disrupted by the construction.		**New Water Main** The condition of the water pipe across land impacted by the Proposed Project was discussed between the landowner and the Applicant at the site visit in December 2023. The Applicant confirmed that services would be identified and protection put in place. Any damage to water infrastructure would be repaired. In this case due to the reported age of the water pipe, the Applicant verbally stated that it would consider the upfront replacement of the old metal pipe with new blue MDPE pipe. The Applicant wrote to the landowner in February 2024 to confirm this offer. Please see the Applicant's response in **LI14.1** regarding proportion of the Farm that is within the Order Limits.
LI14.3	This land is permanent pasture/wild flower meadows and the hedges and trees are a haven for wildlife. Barn owls, tawny owls, numerous other bird species, deer, bats and reptiles all inhabit the land. No fertilisers have been used on the land for nearly a century. How can RWE say that they will reinstate the land–- that is impossible to do.		Section 5.6 of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** provides the environmental measures which will be implemented to manage the impact on protected species and habitat during construction and are secured by Requirement 22 of the **Draft DCO** **[PEPD-009].** This includes the production of a Biodiversity Management Plan for each stage of works, approved by the local authority prior to commencement. The **Outline Landscape and Ecology Management Plan (LEMP)** **[APP-232]** describes how habitats subject to temporary loss will be reinstated and are secured by Requirement 12 and 13 of the **Draft DCO** **[PEPD-009]**. All habitats created and reinstated will be monitored and managed for a period of no less than ten years, to ensure success. Grassland would be reinstated according to its make-up at the time of the detailed design phase. For diverse grasslands the existing seed bank would form the source of seed (as opposed to using a purchased seed mix) as described in Section 4.6 of the **Outline LEMP** **[APP-232]**.
LI14.4	The proposed cable route will be within 75 metres of my house which RWE have failed to mention, is a Grade II listed building. RW''s proposed storage facility on my land will be 10 metres from my house. RW''s Residential Visual Amenity Assessment (Residential Property 18: [REDACTED] (GR 521805, 121063) is, quite frankly, laughable. It states that Dragons Lane is a minor road. It is NOT a minor road, it is an unadopted, unmade single track lane, totally unsuitable of any type of HGV. The RVAA states that the views towards the cable corridor will be contained by farm buildings, trees etc. This is completely false. The cable route will be seen, not only from the ground floor but from all three upstairs bedrooms. RWE have stated that Dragons Lane will not be used for construction purposes yet they are proposing a storage facility on my land off Dragons Lane, How will equipment be delivered to the storage facility if not via Dragons Lane. RWE have failed to answer this question. The noise, air pollution and day to day disruption		The Applicant understands the grade II listed building referred to by the interested party is Crateman's Farmhouse (NHLE 1354155). Crateman's Farmhouse was identified as a historic environment receptor and scoped into the assessment (see Table 5-1 in **Appendix 25.7: Settings assessment scoping report, Volume 4** of the ES **[APP-213]**; Section 2.84 in **Appendix 25.8: Onshore heritage asset baseline report, Volume 4** of the ES **[APP-214]**; and **Chapter 25: Historic Environment, Volume 2** of the ES **[PEPD-020]).** The assessment acknowledges the visibility of proposed temporary construction activities from this listed building (Section 25.9 of **Chapter 25: Historic Environment, Volume 2** of the ES **[PEPD-020]**). The maximum design scenario, as detailed in Table 25-22 of **Chapter 25: Historic Environment, Volume 2** of the ES **[PEPD-020]**, includes total installation duration of up to 36 months for the onshore cable corridor carried out in sections and three to four months construction duration for trenchless crossing compounds. This change to the listed building's setting has been duly considered in the assessment of effects on its heritage significance. Crateman's Farmhouse is included in **Appendix 18.5: Residential Visual Amenity Assessment (RVAA), Volume 4** of the ES **[APP-171]**. The property is described as being accessed via a minor road

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	to my life is of great concern to me. I have lived at [REDACTED] for nearly 70 years and this proposed cable route has been causing my partner and a great deal of stress and worry since we were first Informed of the project in late 2020.		(as shown on Ordnance Survey maps) off the A281 which is also described as a bridleway (ProW 1730) and a footpath (ProW 1736). Despite the presence of farm buildings which would partly 'contain' or frame the views towards the onshore cable corridor, the assessment also notes some partial vegetation screening. The assessment concludes that the construction works will be visible, resulting in a Major / Moderate adverse visual effect that will be Significant. The nature of these effects will be temporary. Taken together **Appendix 18.5: RVAA, Volume 4** of the ES **[APP-171]** concludes that the Proposed Development will not compromise the residential visual amenity, affect living standards, or render the residential property an unattractive place to live when judged objectively and in the public interest. Noise at the access for Dragons Lane is assessed in the **Chapter 21: Noise and vibration, Volume 2** of the ES **[APP-062]** and there are no noise sources that would contribute to a significant effect. Noise from trenchless crossings TC25, TC25a and TC26 are assessed at the nearest receptor on Dragons Lane; the assessment shows that a very low magnitude of change would be present during the day for the duration of the trenchless crossing works. The **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** provides the environmental measures which will be implemented to manage the environmental impacts during construction and are secured by Requirement 22 of the **draft DCO** **[PEPD-009]**. Air quality matters raised within this Relevant Representation have been provided in the Applicant's response in **Table 6.2 'Environment and disturbance'** (below) with further information provided in the Applicant's response in **Table 6.10 'Pollution'** (below). **Use of Dragons Lane for Operational Access** Dragons Lane is within the Order Limits for an operational access (Works No. 15) as shown on Sheet 31 of the **Onshore Works Plans** **[PEPD-005]**. The Land Interest has private rights of access over Dragons Lane, (Plots 31/8, 31/9, 31/12) shown coloured blue on the **Land Plans Onshore** **[PEPD-003]**, which provides access to their residential property. The Applicant is therefore seeking to acquire a package of Operational Access Rights over Dragons Lane, in respect of Plots 31/8, 31/9, 31/12 over which the Land Interest has private rights of access to their residential property. Operational access rights are defined in Schedule 7 of the **Draft Development Consent Order (DCO)** **[PEPD-009]** and in summary comprise rights of access with or without vehicles and equipment: "for the purposes of operation, maintenance and decommissioning of the authorised development". Examples of the rights are expanded on further in Schedule 7. The Dragons Lane access (A-58) is defined in Table 23-25 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** as an operational access only for the onshore cable route shown as part of Work No. 15 sheet 27 of the **Onshore Works Plans** **[PEPD-005]**. There is no route between Dragons Lane and the proposed substation. Paragraphs 23.4.21 and 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** describe the expected operational and maintenance phase activities which includes

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			periodic testing of the cable through attendance by up to three light vehicles such as vans in a day at any one location. Unscheduled maintenance or emergency repair visits for the onshore cable will typically involve a very small number of vehicles, typically light vans. Infrequently, equipment may be required to be replaced, then the use of an occasional HGV may be utilised, depending on the nature of the repair. (Paragraph 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**). In exceptional circumstances during unscheduled maintenance or operational faults, an HGV may be required to support cable repair works. This would be an unlikely worst case scenario that could involve the need to replace a section of cable, for which HGV access may be needed for materials or equipment. In the unlikely event of such a major cable fault in this area, the fault would be investigated and a suitable vehicle arranged for the repair taking into account the access parameters along Dragons Lane. The Applicant is aware of a narrow passage along Dragons Lane that may be prohibitive for HGV-vehicles in the unlikely worst case scenario that could involve the need to replace a section of cabler. HGVs are not anticipated to need to negotiate Dragons Lane for a reasonable worst case scenario. Operational accesses have been identified for light vehicle access for cable maintenance and inspection purposes. Dragons Lane is assessed to provide suitable access for these purposes. The Applicant has provided a response in Action Points 18 and 19, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (Document Reference 8.25) submitted at Examination Deadline 1. The Applicant has provided details on how HGVs would negotiate Dragons Lane in exceptional circumstances during the operational phase of the Proposed Development. **Potential Storage Facility** The Applicant has not applied for a storage facility adjacent to Crateman's Farm. As described in the second and third bullet point in **paragraph 4.5.35** of **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**, temporary construction compounds for trenchless crossings are required for: • trenchless crossings; and • logistics; storage of materials and equipment, location of cement bound sand (CBS) batching plant, also includes welfare facilities and office space as appropriate The Applicant notes, that the wider DCO order limits to the south of Crateman's Farm corresponds to Works No 14 as presented in the **Onshore Works Plans** **[PEPD-005]** and is required to divert the construction haul road through gaps in the vegetation to the west of the trenchless crossing with the crossing reference 'STRX-1de-17, Stream' as presented in Appendix A, Crossing Schedule of the **Outline Code of Construction Practice** **[PEPD-033]**.
LI14.5	I am also concerned about the impact of the proposed substation at Oakendene. The traffic on the A272 though Cowfold is heavy most of the time now and, should the project go ahead, will be intolerable. The village will be gridlocked. I think this project has not been properly thought through. It would appear that the whole idea was dreamt up on		The likely significant transport effects associated with the construction phase of the Proposed Development have been assessed in **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**, **Chapter 32: ES Addendum, Volume 2** of the ES (**Document reference: 6.2.32**) (submitted at Examination Deadline 1) and **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[APP-197]** which has been updated at the Examination Deadline 1 submission. At peak construction, taking account of the construction traffic routing contained within the **Outline**

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	a computer during the worst of the Covid epidemic without any thought of the practicalities.		**Construction Traffic Management Plan (CTMP) [PEPD-035a]** which has been updated at the Examination Deadline 1 submission, the following effects have been identified for Cowfold: • At A281 south of Cowfold (Receptor 23): ▸ An HGV peak week increase of 12 HGVs per day, equivalent to an increase of 7.5% and approximately one HGV per hour; and ▸ A total construction traffic peak week increase of one HGV per day and 71 light goods vehicles (LGVs) per day (5-6 per hour), equivalent to a 1.1% increase in total traffic flow. • The A281 / A272 in the centre of Cowfold (Receptor 24): ▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 3.5% and 3-4 HGVs per hour; and ▸ A total construction traffic peak week increase of 19 HGVs and 154 LGVs (12-13 per hour), equivalent to a 0.7% increase in total traffic flow. • The A272 Station Road west of Cowfold Village centre (Receptor 25): ▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 4.6% and 3-4 HGVs per hour; and ▸ A total construction traffic peak week increase of 19 HGVs and 154 LGVs (12-13 per hour), equivalent to a 0.9% increase in total traffic flow. • The A272 Bolney Road east of Cowfold Village centre (Receptor E): ▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 5.5% and 3-4 HGVs per hour; and ▸ A total construction traffic peak week increase of 19 HGVs and 147 LGVs (12-13 per hour), equivalent to a 0.8% increase in total traffic flow. Based on these construction traffic flows and the conclusions of the **Chapter 23 Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES (**Document reference: 6.2.32**) (submitted at Examination Deadline 1), no significant effects have been identified in relation to transport receptors within the centre of Cowfold.
LI14.6	Why ca''t the substation be sited at Wineham, adjacent the existing substation which would make the cable route shorter and avoid the destruction of another part of the West Sussex countryside?		The Applicant notes the issues raised in this relevant representation. The Applicant has provided further information on the decision to discount the Wineham Lane North site for the onshore substation (see Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (Document reference 8.25) (submitted at Examination Deadline 1). Route alternatives and sifting matters provided within this Relevant Representation have also been provided in the Applicant's response in **Table 6.4 'Route / Alternatives'** (below). Further information

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			has also been provided in the Applicant's response in **Table 6.20 'Design and siting of the onshore substation at Oakendene'** (below).

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Table LI15 Applicants Response to Ancleggan Limited [RR-012]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI15.1	Representation from Ancleggan Limited in response to a notice served on it pursuant to Section 56 of the Planning Act 2009 on behalf of Rampion 2 Offshore Windfarm (the "Rampion Development"). 20. Ancleggan Limited is a company registered in England with company number 12951231 whose registered office is at Biddlesgate Farm, Cranborne, Wimborne, Dorset BH21 5RS ("Ancleggan"). 20. Ancleggan commenced the promotion of a battery energy storage system (the "Ancleggan Development") on land forming part of Charles Worsley's land on the north side of Coombe Farm, Bob Lane, Twineham, Haywards Heath RH17 5NH (the "Ancleggan Land") on 4 November 2020. 20. The purpose of the Ancleggan Development is to provide storage capacity for electricity generated by renewable energy projects so that it can be released when it is needed most. Battery storage technologies are essential to speeding up the replacement of fossil fuels with renewable energy. Battery storage systems will play an increasingly pivotal role between green energy supplies and responding to electricity demands. [REDACTED] 20. Ancleggan has an interest in land by virtue of an option agreement entered into between (1) Charles Worsley and (2) Ancleggan on 17 December 2021 (the "Option Agreement"). The Option Agreement is recorded on the register of title for title number WSX22448 at HM Land Registry. The Option Agreement grants Ancleggan a right to call for a lease of the Ancleggan Land.	014	The company and project details are noted. **The Parties** The Applicant has been engaging in relation to the land the subject of this Relevant Representation on a number of fronts: - With the landowner, who was first consulted by the Applicant about the Proposed Development by letter dated 20t[h]h November 2020, and was and subsequently consulted on the Proposed Development in January/ February 2021 and again in July 2021 (see further information the Applicant's response to Relevant Representation **Table LI45 Applicant's Response to Charles Roderick Worsley [RR-059]** (below). - The landowner first informed the Applicant of a potential solar array and battery storage scheme in an on-site meeting with the Applicant on 14 May 2021; - With Ancleggan Limited, which is the entity with the legal interest in land that has entered into the Option Agreement with the landowner in respect of the "Ancleggan Land". In this respect the Applicant notes that the land owner is one of the directors of Ancleggan Limited and further notes that Ancleggan Limited concluded the Option Agreement with the landowner on 17 December 2021, some time after the Proposed Development was first consulted upon and after the Applicant had identified Bolney NGET substation as its grid connection point. The landowner and Ancleggan Limited were therefore aware of the Proposed Development at the time of entering into the Option Agreement; - Discussions between the Applicant and Ancleggan Limited have been taken forward by One Planet Developments Limited, Ancleggan Limited's agent. The Applicant has been engaging directly with Ancleggan Limited's One Planet representatives since 9th February 2022, shortly after the Option Agreement was concluded in December 2021. This originated from a request from the freehold owner of the Land that Ancleggan Limited representatives attend a Rampion 2 progress update call that had been arranged by the Applicant; - National Grid Electricity Transmission ("NGET"), who owns and operates the existing Bolney substation to the west of the Ancleggan land owns land required for the Applicant's proposed extension to that substation (see further information in the Applicant's response to the NGET Relevant Representation **Table 2.37 National Grid Electricity Transmission PLC [RR-032]** (above)). The Applicant understands that the proposed Ancleggan Limited development has a grid connection offer from UK Power Networks of 2031 which is some time after the grid connection offer date for the Proposed Development which is currently 2026.
LI15.2	5. On 4 April 2022 Ancleggan wrote to Rampion 2 Extension Development Limited ("R2ED") in response to R2ED's public consultation notifying R2ED of the Ancleggan Development and objecting to the potential use of the Ancleggan Land as the site of		- A permanent easement for the Rampion 2 cable is required to enable the construction, retention, operation and maintenance of the underground cable connection, including restrictive covenants to protect the apparatus. The

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	the Rampion Development substation. R2ED subsequently chose to locate its substation at Oakenden and connect to the National Grid electricity substation at Bolney. 6. Since July 2022, Ancleggan has held regular online meetings with R2ED during which each party has kept the other party updated with the progress of its respective development. 7. Ancleggan's agent, One Planet Developments Limited submitted a screening request to Mid Sussex District Council on 26 April 2021. It subsequently submitted a planning application in respect of the Ancleggan Development to Mid Sussex District Council on 20 March 2023, (reference DM/23/0769) (the "Ancleggan Application") The Ancleggan Application was validated on 20 March 2023 and is expected to be determined shortly. 8. The Ancleggan Land forms part of the area designated for "Work No. 19 – Onshore Connection works" on Sheet 34 of the R2ED's Onshore Works Plans dated 25 July 2023. 9. Ancleggan understands that R2ED intends to lay a pair of 400kV cables between R2ED's substation at Oakendene and the National Grid substation at Bolney. In a letter to the planning officer considering the Ancleggan Application dated 21 April 2023, R2ED stated that it "requires a 30m construction corridor, becoming a 20m permanent easement" for the R2ED cables. 10. The relevant part of the development consent order boundary applied for which affects the Ancleggan Land provides for a boundary which runs between 100 and 125 meters inside the Ancleggan Land. 11. Ancleggan understands that the reason for this request is to allow R2ED flexibility in the eventual location of the 30-meter construction corridor and 20-meter permanent easement referred to in its letter of 21 April 2023 for the R2ED cables. 12. Ancleggan has shared its survey data over the Ancleggan Land with R2ED which indicate that there are a number of existing cables in the south-western corner of the Ancleggan Land. Ancleggan believes that there is room at this boundary to accommodate the R2ED cables if a collaborative approach to the cable route is taken by R2ED and National Grid with Ancleggan. We believe this could significantly mitigate the severely adverse impact of the proposed development consent boundary on the Ancleggan Project. 13. Ancleggan submits that it is unreasonable for R2ED to be granted a disproportionately large development consent order boundary within the Ancleggan Land. This is particularly the case given the Ancleggan Land is to the north-east of the National Grid Substation and to the east of R2ED's proposed substation at		following rights are required: Rights within a 30m construction corridor with potential widening of the construction corridor in the vicinity of obstacles - A 20m permanent easement for operation of the cable for the life of the project The Applicant substantially reduced the extent of Ancleggan land proposed to be utilised for the Proposed Development further to the decision to proceed with the alternative Oakendene substation and not proceed with Wineham Lane north. The Applicant has attended regular Teams calls and site visits with Ancleggan Limited's agent One Planet, providing detail on project requirements, project updates and explanations of constraints. **The Land Requirements** Part of the land under option to Ancleggan Limited comprises Plots 34/19 and 34/20 of the Order Land which are shown coloured blue on **Land Plans Onshore [PEPD-003]** for the acquisition of new rights and the imposition of restrictive covenants. The land is located north of, but in proximity to, the Bolney NGET substation. The Applicant requires the land for its Onshore Connection Works (work no 19) and seeks a package of permanent rights (Cable Rights) in relation to this land to enable the construction, retention, operation, maintenance and decommissioning of the underground cable connection, together with a restrictive covenant (Cable Restrictive Covenant) to protect the apparatus. As explained in paragraphs 6.9.42-6.9.44 of the **Statement of Reasons [PEPD-012]**the standard trenched cable construction corridor is 40m wide, with an expected 20m permanent easement. In this specific location rights for a 30m construction corridor are anticipated to be required due to the reduced number of cable circuits from 4 to 2 between the permanent onshore substation at Oakendene to the Bolney Substation Extension. The reduction in cable circuits has a resulting reduction in land requirement to 30m cable construction corridor width. Potential widening of the construction corridor may still be required in the vicinity of obstacles. - **Consideration of Alternatives** The Applicant identified Bolney NGET substation as the final connection point for Rampion 2 prior to 2019 when the NGET grid connection application was submitted by the Applicant to NGET. Whilst Oakendene was chosen for the main substation building, the final connection to Bolney NGET is required to connect to the National grid network. The Jan- Feb 2021 non-statutory consultation included the provision of a "Cable Options" plan 42285-WOOD-CO-ON-FG-0001 which showed a cable route option running through the land now subject to the Option Agreement with Ancleggan Limited for the One Planet Proposal, to the north east of Bolney substation. The Plan also

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	Oakendene, and therefore not enroute. The flexibility R2ED wishes to preserve suggests that R2ED has prematurely submitted its application for a development consent order because it has not yet determined with sufficient accuracy where the R2ED cables will be located. 14. The width of the development consent order boundary applied for has a disproportionately adverse effect on the Ancleggan Development. If granted as applied for, the boundary may make the Ancleggan Development economically unviable or significantly more expensive and technically complex to develop.		showed the land owned by Mr Worlsey as being within a "substation area of search" (Wineham Lane North), along with 2 other potential substation locations. This plan was included in the "virtual exhibition" (see **Appendix 11 'Rampion 2 Virtual Exhibition 2021**) which was uploaded onto the Rampion 2 website in January 2021. Further to this consultation, the works plans were refined to include land required for the onshore cable connection within the PEIR boundary shown on the PEIR location plans which formed part of the first Statutory Consultation from July 2021. Consultation responses were taken into account alongside environmental and engineering work and a decision to proceed with the Oakendene substation was made in July 2022. The Applicant substantially reduced the extent of Ancleggan Limited land proposed to be utilised for the Proposed Development following its decision to proceed with the Oakendene substation and not proceed with the potential Wineham Lane north site. This resulted in the exclusion of the eastern part of the Ancleggan Limited land from the draft DCO boundary which was in turn consulted upon in the second statutory consultation in October 2022. Ancleggan Limited responded to this consultation objecting to the inclusion of the Ancleggan Land for the proposed Rampion 2 development due to their proposed One Planet Battery Storage scheme. Further information regarding the Oakendene Substation alternatives has been provided by the Applicant in **Table MPB20 'Design and siting of the onshore substation at Oakendene'** (Document Reference 8.24) and further information is available in Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (Document reference 8.25) (submitted at Examination Deadline 1). **Constraints** Since the initial meeting in February 2022, the Applicant has attended regular Teams calls and site visits with Ancleggan Limited's agent One Planet, providing detail on project requirements, project updates and explanations of constraints. Through these meetings and exchanges, the Applicant received buried services survey information from Ancleggan Limited's agent One Planet in 2023 and the Applicant has also shared its survey data of buried services on NGET land adjacent to Ancleggan land with their representatives. This information has been collated with other constraints and features onto a 'constraints and features plan', which is being prepared to accompany a memorandum of understanding (MOU) with Ancleggan Limited's agent One Planet. The current constraints and features on and in the vicinity of the Ancleggan land comprise of: - Flood risk areas to the north and west of the Ancleggan land - Ancient woodland to the north west of the Ancleggan land and to the south of Bolney NGET substation - Category A Trees and associated route protection areas immediately west of the Ancleggan land - The existing Bolney NGET substation - Buried services owned by NGET, UK Power Networks (UKPN) and other utilities running east-west to the south of the Ancleggan land and through the Ancleggan land

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			- Land to the south of Bolney NGET substation is subject to UKPN land interests and accommodates UKPN equipment and services infrastructure. There is also a watercourse to the south. The Order Limits and land rights required the Proposed Development in this location have been arrived at taking into account the above constraints; the requirement for the underground onshore connection works (work no 19); and the required extension to the NGET Bolney substation extension (work no. 20) which is to be designed by NGET as part of the grid connection agreement with Rampion 2. The Applicant has also had regard to: - the potential Ancleggan Limited development–- planning permission has yet to be obtained for this scheme and the proposed grid connection is 2031, 5 years later than that for the Proposed (Rampion 2) Development; and– - an early pre- application stage grid stability scheme to the west of the Ancleggan Land and north of Bolney substation within the Order Limits (limited weight attached due to pre- planning status)
LI15.3	15. Ancleggan believes that it is open to R2ED and National Grid to agree a more direct cable route between the Oakendene and Bolney substations which does not enter the Ancleggan Land at all, and therefore avoids the technical complexities required in crossing the pre-existing cables in the south-western corner of the Ancleggan Land. 16. Accordingly, Ancleggan requests that the development consent order application boundary does not encroach on the Ancleggan Land. 17. If the Examiner is not minded to grant Ancleggan's request in paragraph 16, Ancleggan requests in the alternative that insofar as the development consent order application boundary affects the Ancleggan Land, it is reduced to no more than 40 meters in width at its widest point from the westernmost boundary of the Ancleggan Land.		**NGET Grid Connection Agreement and Design work** NGET's role as statutory undertaker is to provide a grid connection for the Proposed Development pursuant to a grid connection offer request. It is also the owner of the land required for the connection. A grid offer and associated documents were issued in 2019. As part of the connection offer, NGET has responsibility to provide a design for the project connection which NGET has confirmed is to comprise of 2 connection bays to the east of Bolney substation. Please see the Cable and Grid Connection Statement [APP-034]. It is common for a developer to secure a grid connection offer or agreement in advance of securing planning consent as the Applicant has done. It also usual for the grid company to carry out the design work at what it considers to be the appropriate phase/ time as part of the agreement. Details of the grid connection had not been provided by NGET by the latter stages of EIA in early 2023 despite the grid offer being signed in 2019. Therefore, based on the Applicant's own existing assessments of EIA sensitivities, utilities mapping and construction constraints, the Applicant proposed a location for siting of the Rampion 2 connection bays and associated equipment. This outline location and footprint for the Rampion 2 bays and associated infrastructure is shown on the **Onshore Works Plan [PEPD-005]** Sheet 34 as Work no. 20 and is to the East of Bolney NGET substation – the Bolney NGET extension. The details of the grid connection have been awaited by the Applicant since 2019 and further to a series of meetings it has now been confirmed by NGET that the connection location will be in the location identified by the Applicant. The NGET Bolney extension design is expected to be received from NGET in March 2024 in accordance with their report at the last meeting on 25th January 2024. The Bolney extension design by NGET will have a direct influence on the final cable routeing north and east of the extension equipment. The NGET Bolney extension

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			design will dictate the location of the Rampion 2 cable in the Ancleggan land alongside the known environmental and buried services constraints and future unknown environmental constraints that may need to be dealt with at the construction stage (for example protected species mitigation requirements).
LI15.4	18. In addition, Ancleggan supports Mr. Worsley's requests that: a. the R2ED cable route should be defined at an early stage in the development consent order process so as to avoid the mature trees classified on the boundary of the Ancleggan Land which are identified in the Arboricultural Constraints Plan (Appendix B to Rampion 2 Environmental Statement Volume 4, Appendix 22.16: Arboricultural Impact Assessment (Document EN010117-000247-6.4.22.16)) as High Quality Category A trees; b. that the cable construction corridor should be reduced to 14-meters if it crosses the hedge onto the western boundary of the Ancleggan Land in accordance with the "Principles to minimise harm" set out on page 57 of Rampion 2 Environmental Statement Volume 4, Appendix 22.16: Arboricultural Impact Assessment (Document EN010117-000247-6.4.22.16); and c. under no circumstances should the trees comprising group G248 be removed. In support of this, we refer to a report prepared on behalf of Ancleggan by Ian Howell, Arboriculturist of the arboricultural consultants Barton Hyett Associates which states: "These works would have the potential to result in harmful severing of anchoring roots and feeder roots of mature English oak and common ash trees that are part of an important landscape and habitat feature for the site. There is also the potential for tree removals to be required to facilitate the works or as the result of the works being carried out. This would equate to high arboricultural impacts for the sites arboricultural resource that could easily be avoided by utilising an alternative cable route." 19. Further, Ancleggan supports Mr. Worsley's suggestion that if the R2ED cables are to be located within the Ancleggan Land at all, the least environmentally damaging crossing point would be the existing hedge gap between two ash trees suffering from vascular wilt fungus (Ash Dieback). This is also supported by the Barton Hyett Associates arboricultural report which states, referring to this route: "The alternative cable route… would utilise a historic breakthrough point that had previously been created for Rampion 1 construction works, where the sum of the tree losses would equate to a single Category U common ash tree that was in a state of acute decline during the August 2022 survey. The Rampion 1 construction access track can still be seen quite clearly within the aerial imagery as a lighter green corridor of grass running west to south-east across the neighbouring field. Where this reached the tree-line it broke though a natural, and then previously widened, gap in the tree-line. As mentioned above utilising the route of this previously established (and now restored) construction track would avoid the potential for significant negative impacts on the sites arboricultural resource all together, and is by far the preferred option from an arboricultural perspective. I would therefore strongly advise that [this] … cable route … be adopted into the proposals in order to avoid unnecessarily impacting on this prominent tree group (G4)."		**Latest Position and Communications with Ancleggan Limited** The Rampion 2 **Onshore Works Plan** **[PEPD-005]** shows the cable easement in this location as Work no. 19. The current Ancleggan Limited battery storage proposal design conflicts with the Rampion 2 Cable construction requirements. Batteries and a permanent substation are proposed on the Ancleggan land which is also identified to be used for the Proposed Development. This overlap of requirements is shown on the plan attached at **Appendix 12 Rampion 2 One Planet Conflict Plan**. The proposed Ancleggan Development substation is located in the western part of the Angleggan Development Land where it is has the greatest potential to conflict with the Rampion 2 onshore cable route due to the limited physical 'gap' between the Bolney Substation infrastructure and the existing Rampion 1 substation and the presence of a number of existing buried services within this gap which needs to be passed to access the Bolney extension area. This has been communicated by the Applicant to One Planet and an objection was submitted to the Angcleggan 'One Planet' planning application by the Applicant due to these conflicts. Copies of the letters are attached at **Appendix 13: Rampion 2 Objection One Planet Planning Application (1)** and **14 Rampion 2 Objection One Planet Planning Application (2)**. Further refinements to both the Rampion 2 cable route (down to a 30m working corridor) and the One Planet projects have been discussed between the parties. The Rampion 2 refinements will be progressed and included in stage specific management plans in accordance with Requirement 23 of the **Draft Development Consent Order (DCO)** **[PEPD-009]** following: -NGET's finalisation of the Bolney Extension connection point design; -cable route refinement in light of pre-construction environmental surveys; -agreed construction designs and methods to ensure the protection of existing infrastructure in the ground (some of which might move between now and construction of the schemes). These services may have a bearing on the required Rampion 2 cable routeing. The Applicant has communicated with One Planet the content of the discussions with NGET, the requirement for the NGET design work in progress and the likely timescales for delivery. The Applicant has also communicated to One Planet that the land in the south western corner of the Ancleggan land is likely to be critical to the proposed route through to the Bolney NGET Extension in its location east of the main Bolney Substation due to the presence of existing operational Bolney substation infrastructure to the west of the Ancleggan land.

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	20. For clarity, the points raised in this representation have all been raised with R2ED on numerous occasions before R2ED's application for a development consent order was submitted.		The Applicant will where possible work collaboratively with One Planet and try to agree a design that would result in a mutually acceptable arrangement and therefore the coexistence of the two projects but taking into consideration all of the other environmental and engineering constraints on the land and adjacent land. The Applicant understands from meetings that One Planet also agrees to try to minimise disruption to the Rampion 2 project, however to date One Planet planning application proposes batteries and a substation on land that is required for the Proposed Development Connection Works and this built infrastructure will interfere with the proposed works to install the cable. It is anticipated by the Applicant that further to clarification on connection and design from NGET, both the Applicant and One Planet will be able to consider whether there is potential to make further project refinements to the project designs to minimise impacts on infrastructure for both Projects. A Memorandum of Understanding (MOU) has been drafted and will continue to be developed for intended submission at Deadline 3. If the One Planet proposal is granted planning consent and secures an earlier grid connection date facilitating an early build, the Applicant will seek to minimise impacts on the One Planet proposal through cable corridor refinement subject to the constraints referred to above. However, it is anticipated that there will be an unavoidable Rampion 2 requirement to deliver its underground cable connection through the southwestern part of the Ancleggan land given its location on the entry to Bolney substation. As noted above the NGET Bolney extension design will dictate the location of the cable and the minimum possible cable corridor width in the Ancleggan land alongside the known environmental and buried services constraints and future unknown environmental constraints that may need to be dealt with at the construction stage (for example protected species mitigation requirements). It is not possible to confirm whether it will be possible to avoid the removal of trees on the western boundary of the Ancleggan Land (including those forming G248) at this time, but minimising the removal of mature and high-quality trees across the scheme is a principal consideration that will be explored further at the detailed design stage. Where tree removal is unavoidable, a proportionate level of replacement planting will be provided in accordance with the calculation rates presented in **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the Environmental Statement **[APP-194]** and secured by Commitment C-286, detailed in the Commitments Register [APP-254**]** which is secured through the **Outline Landscape and Ecology Management Plan [APP-232]** Requirement 12 of the **Draft DCO [PEPD-009]**.

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Table LI16 Applicants Response to Ronald Alan Leggett [RR-328]

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LI16.1	There are already long queues of traffic travelling West into Cowfold Village every morning and evening with very many Heavy Good Vehicles. plus vehicles stopping for any more than a few minutes such as deliveries, collections, breakdown etc, This traffic tails back past our property [REDACTED] along to Kent Street and on most occasions, even further. In the event of even minor incidents, let alone accidents, the tail back can reach Bolney – 2.2 miles from our property and has affected traffic on the A23 on occasions. Both we, and our neighbour behind who has businesses and an Air B&B, can usually egress with a brief delay, but returning to our properties can already have up to an hour delay with current traffic as detailed above. This is something also experienced by other neighbours, with driveways 100m either side of us. The A272 in this area has no footpaths on either side of the road, and in places, no grass verge at all. With the standing traffic heading into Cowfold and vehicles heading towards Bolney, it is impossible for even a cyclist to get past, let alone any emergency vehicles which may be attending accidents, local residents or the village of Cowfold. In this last year, we have had to call ambulances for ourselves on two occasions, and to a road accident outside our property where two ambulances, four police cars and a fire engine were required. Any increase in traffic or delays with traffic lights etc, on the A272 is totally unacceptable, and will cause gross inconvenience and danger to ourselves and nearby residences, as well as to the Rampion 2 project. Immediate consultation is therefore required with West Sussex County Council Highways Department to alleviate the existing situation, let alone any proposed works.	016	**Context**
			
			Details of the proposals in this location are shown on Sheet 33 of the **Onshore Works Plans [PEPD-005]**.
			
			The Land Interest owns a dwelling to the north of the A272. The Land Interest's title borders an A road to the south (the A272) which is adopted highway. The Applicant identified the Land Interest as a presumed owner of part width of the subsoil of that highway comprising plot 33/19 (which is unregistered), as shown coloured blue on the **Land Plans Onshore [PEPD-003]**. The Land Interest was consulted on that basis on 13 October 2022.
			
			Plot 33/19 is included within the Order Limits for both construction and operational access (Works No.14) to the Oakendene substation and therefore a package of Construction and Operational Access Rights is proposed to be compulsorily acquired over this Plot. Those rights are defined in Schedule 7 to the daft Development Consent Order (DCO) [PEPD-009].
			
			Traffic Impacts
			
			The likely significant transport effects associated with the construction phase of the Proposed Development have been assessed in **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**, **Chapter 32: ES Addendum, Volume 2** of the ES (**Document reference: 6.2.32**) (submitted at Examination Deadline 1) and **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[APP-197]** which has been updated at the Examination Deadline 1 submission. At peak construction, taking account of the construction traffic routing contained within the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]** which has been updated at the Examination Deadline 1 submission, the following effects have been identified for Cowfold:
			
			• At A281 south of Cowfold (Receptor 23):
			  ○ An HGV peak week increase of 12 HGVs per day, equivalent to an increase of 7.5% and approximately one HGV per hour; and
			  ○ A total construction traffic peak week increase of one HGV per day and 71 light goods vehicles (LGVs) per day (5-6 per hour), equivalent to a 1.1% increase in total traffic flow.
			• The A281 / A272 in the centre of Cowfold (Receptor 24):
			  ○ An HGV peak week increase of 39 HGVs, equivalent to an increase of 3.5% and 3-4 HGVs per hour; and
			  ○ A total construction traffic peak week increase of 19 HGVs and 154 LGVs (12-13 per hour), equivalent to a 0.7% increase in total traffic flow.
			• The A272 Station Road west of Cowfold Village centre (Receptor 25):

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			○ An HGV peak week increase of 39 HGVs, equivalent to an increase of 4.6% and 3-4 HGVs per hour; and ○ A total construction traffic peak week increase of 19 HGVs and 154 LGVs (12-13 per hour), equivalent to a 0.9% increase in total traffic flow. • The A272 Bolney Road east of Cowfold Village centre (Receptor E): ○ An HGV peak week increase of 39 HGVs, equivalent to an increase of 5.5% and 3-4 HGVs per hour; and ○ A total construction traffic peak week increase of 19 HGVs and 147 LGVs (12-13 per hour), equivalent to a 0.8% increase in total traffic flow. Based on these construction traffic flows and the conclusions of the **Chapter 23 Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES (**Document reference: 6.2.32**) (submitted at Examination Deadline 1), no significant effects have been identified in relation to transport receptors in the centre of Cowfold. At peak construction at this location approximately 274 heavy goods vehicles (HGV) will use Kent Street in one week, equivalent to 55 HGVs per day or 4-5 per hour. This peak construction traffic flow, as detailed in Table 2.4.57 of the **ES Addendum** (submitted at Deadline 1), is related to construction access A-64, which is located 200m south of the junction with the A272. The peak construction traffic flow associated with Access A-64, located 700m south of the A272, however is much lower than A-64 with a total construction traffic peak of 31 vehicles per day and an HGV peak of 28 vehicles per day or 2-3 HGVs per hour. Construction traffic will need to use Kent Street for approximately 38 weeks of the construction programme although it is noted that this will not be continuous. There are multiple peaks in construction traffic for access A-61 and A-64, associated with different construction activities that include haul road construction, cable trenching, duct laying, backfilling, HDD activities, cable pulling and haul road reinstatement. Whilst the peak week of construction traffic is predicted to lead to a significant environmental effect (as identified in the **ES Addendum** (submitted at Deadline 1) this peak lasts for only approximately two weeks of the construction programme. In between peaks the traffic flows will be minimal per day. For example, it is outside of these peak periods, it is predicted HGV flows will be more than 10 vehicles per day (one per hour) for only 13 weeks of the construction programme. Given the single lane track nature of Kent Street, the Applicant is currently reviewing options for the implementation of traffic management along Kent Street and accesses A-61 and A-64 to provide safe access for construction and general traffic. This may involve measures such the implementation of a speed limit reduction, passing places, or managed access via banksmen. The outcomes of this review will be discussed with West Sussex County Council at the earliest opportunity with the aim of reaching an agreement in principle to the traffic

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			management strategy. This would then be secured through a detailed CTMP for the stage of the authorised development comprising Kent Street which will be required to be submitted and approved by the highways authority before commencement within that stage in accordance with requirement 24(1)(a) of the **Draft Development Consent Order (DCO)** **[PEPD-009]**.

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Table LI17 Applicants Response to Elizabeth Anne Leggett [RR-109]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI17.1	I object to the proposals. I agree with the views expressed by CowfoldvRampion , our community action group, and support the evidence they will provide. Traffic and Pollution in Cowfold Traffic in Cowfold is a big concern for the residents of, not only the A272 and the quiet country lanes around the substation site, but for the whole village and the far wider community who use this road on a daily basis. CowfoldvRampion do not agree with Rampion's methodology for assessing the impact, and believe they have significantly downplayed the impacts on congestion, pollution and accident rates. They have not properly understood the way the mini roundabouts in Cowfold alter the flow of traffic, or why looking at only percentage increases in traffic numbers is too simplistic an approach. Cowfold will provide evidence, both based on local knowledge testimony, and scientific evidence, of the more likely true effect of the proposed vehicle movements. The traffic movements will affect the AQMA in Cowfold to a far greater extent than they suggest. The impact on the tiny lanes of Kent Street and Moatfield lane will create an unacceptable level of misery for the residents for the duration of the construction, and also for those on Picts Lane and Bulls Lane to the north. The economic effects of the traffic movements and congestion have also been underestimated. No Traffic Impact Assessment has been carried out for Kent Street. This is not acceptable, given the extent to which it will be used, and the fact that the impact assessment on other lanes such as Wineham Lane was used to exclude the Wineham Lane substation sites from consideration. The recent incident which involved the A272 between Picts Lane & Wineham Lane resulted in the A272 being closed for a day. This resulted in confrontations, vehicle stuck in ditches and hours lost by people some of which no doubt would have been travelling to Gatwick Airport. CowfoldvRampion will give evidence at Examination that Rampion have failed to adequately consider or have played down, both the health and social impacts of this, or to consider the alternatives. Wineham Lane was widened in the 1960s for the construction of the main substation site. No concerns were raised in the relevant representations for Rampion 1 regarding traffic on A272 at the Wineham Lane turning. I would like to see Traffic taken forward as part of a Principal Issue in the Examination and ask that you allow local knowledge testimony on this subject at the hearings. I would also like to request a site visit to Oakendene and a topic-specific hearing at the Village Hall in Cowfold to properly examine the consequences of the proposed substation and to why the proposed cable route was selected when a direct route would have alleviated the necessity of the Oakendean site being planned at all. All this and its impact on Cowfold, its community, businesses and environment	018	The Applicant notes the points made by the Interested Party. The Applicant has provided a response to the representation made by CowfoldvRampion, please see the Applicant's response in reference **6.11.1** (below). **Context** Details of the proposals in this location are shown on Sheet 33 of the **Onshore Works Plans [PEPD-005]**. The Land Interest owns a dwelling to the north of the A272. The Land Interest's title borders an A road to the south (the A272) which is adopted highway. The Applicant identified the Land Interest as a presumed owner of part width of the subsoil of that highway comprising plot 33/19 (which is unregistered), as shown coloured blue on the **Land Plans Onshore [PEPD-003]**. The Land Interest was consulted on that basis on 13 October 2022. Plot 33/19 is included within the Order Limits for both construction and operational access (Works No.14) to the Oakendene substation and therefore a package of Construction and Operational Access Rights is proposed to be compulsorily acquired over this Plot. Those rights are defined in Schedule 7 to the **Draft** Development Consent Order (DCO) [PEPD-009]. **Traffic Impacts** A272 and Cowfold AQMA, to limit the effects on these receptors a range of embedded environmental measures have been provided by the Applicant as detailed within the **Commitments Register [APP-254]** which has been updated at the Examination Deadline 1 submission and secured through the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]** which has been updated at the Examination Deadline 1 submission including: • Commitment C-157: The proposed heavy goods vehicle (HGV) routing during the construction period to individual accesses will be developed to avoid major settlements of Storrington, Cowfold, Steyning, Wineham, Henfield, Woodmancote and other smaller settlements where possible; and • Commitment C-158: The proposed heavy goods vehicle (HGV) routing during the construction period to individual accesses will avoid the Air Quality Management Area (AQMA) in Cowfold where possible. These commitments are also reflected in Table 5-1 of the **Outline CTMP [PEPD-035a]** which has been updated at the Examination Deadline 1 submission and confirms prescribed local Heavy Goods Vehicle (HGV) access routes for all sections of the onshore

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			cable corridor and Table 5-2 which details specific local constraints and proposed management of construction traffic routes. These commitments ensure that HGV construction traffic will route along the A27 and A23 to gain access to the A272 east of Cowfold wherever possible, thereby avoiding the village centre. Therefore, only accesses A-52, A-56 and A-57 will require construction traffic to route through Cowfold Village centre. As calculated by using data included in Table 5-3 of the **Outline CTMP** **[PEPD-035a]** which has been updated at the Examination Deadline 1 submission, the impact of this commitment is the removal of up to 22,000 two-way HGV trips (11,000 HGVs) from Cowfold Village centre over the construction phase. Whilst commitment C-157 and C-158 (**Commitments Register** **[APP-254]**, updated at Examination Deadline 1) discourages traffic from routeing through the Cowfold AQMA for robustness within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**, it has been assumed that approximately 25% of HGV traffic will route through Cowfold from the A24 and A272 east of the village centre when entering or exiting construction accesses at Oakendene, Kent Street or Wineham Lane. This accounts for the potential delivery of material or equipment to / from locations directly west of Cowfold where it would not be possible to adhere to commitments C-157 and C-158 of the **Commitments** Register **[APP-254]** or use of the Strategic Road Network and provides a robust assessment of impacts within Cowfold. At peak construction, taking account of the construction traffic routing contained within the **Outline CTMP** **[PEPD-035a]** which has been updated at the Examination Deadline 1 submission, the following effects have been identified for Cowfold: • At A281 south of Cowfold (Receptor 23): ▸ An HGV peak week increase of 12 HGVs per day, equivalent to an increase of 7.5% and approximately one HGV per hour; and ▸ A total construction traffic peak week increase of one HGV per day and 71 light goods vehicles (LGVs) per day (5-6 per hour), equivalent to a 1.1% increase in total traffic flow. • The A281 / A272 in the centre of Cowfold (Receptor 24): ▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 3.5% and 3-4 HGVs per hour; and ▸ A total construction traffic peak week increase of 19 HGVs and 154 LGVs (12-13 per hour), equivalent to a 0.7% increase in total traffic flow. • The A272 Station Road west of Cowfold Village centre (Receptor 25): ▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 4.6% and 3-4 HGVs per hour; and

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			▸ A total construction traffic peak week increase of 19 HGVs and 154 LGVs (12-13 per hour), equivalent to a 0.9% increase in total traffic flow. • The A272 Bolney Road east of Cowfold Village centre (Receptor E): ▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 5.5% and 3-4 HGVs per hour; and ▸ A total construction traffic peak week increase of 19 HGVs and 147 LGVs (12-13 per hour), equivalent to a 0.8% increase in total traffic flow. Based on these construction traffic flows and the conclusions of the **Chapter 23 Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES (**Document reference: 6.2.32**) (submitted at Examination Deadline 1), no significant effects have been identified in relation to transport receptors within the centre of Cowfold. Kent Street Kent Street is identified within the **Outline CTMP** **[PEPD-035a]** as a single track road which will be used as a construction traffic route to accesses A-61 and A-64 as shown on Figure 7.6.4d within the **Outline CTMP** **[PEPD-035a]**. It should be noted that both access A-61 and A-64 are located north of residential properties on Kent Street and therefore construction traffic will not route past these properties. This reflects commitment C-157 (**Commitment Register** **[APP-254]**) which states that HGVs should avoid smaller settlements where possible, the prescribed local access routes defined in Table 5-1 of the **Outline CTMP** **[PEPD-035a]** and the mitigation identified to avoid the use of small single-track roads as much as possible as defined in Table 5-2 of the **Outline CTMP** **[PEPD-035a]**. Given the single lane track nature of Kent Street, the Applicant is currently reviewing options for the implementation of traffic management along Kent Street and accesses A-61 and A-64 to provide safe access for construction and general traffic. This may involve measures such the implementation of a speed limit reduction, passing places, or managed access via banksmen. The outcomes of this review will be discussed with West Sussex County Council at the earliest opportunity with the aim of reaching an agreement in principle to the traffic management strategy. This would then be secured through a detailed CTMP for the stage of the authorised development comprising Kent Street which will be required to be submitted and approved by the highways authority before commencement within that stage in accordance with requirement 24(1)(a) of the **Draft Development Consent Order (DCO)** **[PEPD-009]**. Moatfield lane

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			The private road known as Kings Lane and Moatfield Lane carries the designation of Bridleway 1730 and footpath 1782, which is the highest level of public access available. As it is not a public road, it has been included within the red line boundary of the project in order to secure a right of vehicular access to operate and maintain the cables. Kings Lane and Moatfield Lane provide a route to access A-60 which is defined in Table 23-24 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** as an operational access only for the onshore cable route. Paragraphs 23.4.21 and 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** describe the expected operational and maintenance phase activities which includes periodic testing of the cable through attendance by up to three light vehicles such as vans in a day at any one location. Unscheduled maintenance or emergency repair visits for the onshore cable will typically involve a very small number of vehicles, typically light vans. Infrequently, equipment may be required to be replaced, then the use of an occasional HGV may be utilised, depending on the nature of the repair. (Paragraph 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**) Sheet 32 of the **Onshore Works Plan** **[PEPD-005]** also shows that Kings Lane and Moatfield Lane is for operational purposes only. As shown in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** the crossings of Kings Lane and Moatfield Lane by the onshore cable route is identified within Appendix A under reference TRX-1de-32 as being crossed by open cut method. This means that during construction access to properties located along Kings Lane and Moatfield Lane will be temporarily affected. The strategy to maintain private means of access during this period is described in Paragraph 5.7.10 of the **Outline CoCP** **[PEPD-033]**. The following general principles will apply to the managed or private means of access during the cable route construction: • Any access restrictions or effect on individual properties will be kept to a minimum and the Applicant will work with local stakeholders to develop individual solutions to keep disruptions as low as is reasonably possible. • All crossings of private means of access will be developed to allow emergency access at all times. • Contractors will be required to accommodate reasonable requests for access during the working day by temporary plating of the trench unless a suitable diversion is provided around the works. • The trench will be plated or temporarily backfilled outside of construction working hours where feasible to restore access, unless a suitable diversion is provided around the works. • Any access restrictions or closures will be communicated to all residents and businesses with affected rights of access. • A nominated point of contact on behalf of the applicant will be communicated to all residents and businesses at least three months before the start of construction.

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			A final Code of Construction Practice will be required to be submitted and approved on a staged basis, in accordance with the **Outline CoCP** **[PEPD-033]**, pursuant to requirement 22. Air Quality: Impacts from road traffic emissions at sensitive receptor locations within Cowfold, and Cowfold AQMA specifically, have been assessed and are reported within the **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]**. The air dispersion traffic modelling used traffic data based on annual peak daily traffic, rather the annual average daily traffic stipulated in the Defra guidance. Therefore, the completed assessment was highly conservative. Impacts from emissions of NO_2, PM_{10} and $PM_{2.5}$ were considered. The assessment concluded that the impact from construction traffic emissions is negligible at all sensitive receptor locations, including residential receptors within the AQMA. Route alternatives and sifting matters provided within this Relevant Representations have been responded to by the Applicant in **Table 6.4 'Route / Alternatives'** (below). Further information regarding matters relating to the Oakendene Substation raised within this Relevant Representation have been responded to by the Applicant in **Table 6.20 'Design and siting of the onshore substation at Oakendene'** (below) and further information is available in Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (Document reference 8.25) (submitted at Examination Deadline 1). Further community and environmental impact matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'** and **Table 6.25 'Impacts on local communities'** (below).

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Table LI18 Applicants Response to Richard Napier Luce [RR-314]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI18.1	Dragon's Lane: This is a private unmade up lane with six houses. Rampion propose to use it for 'operational access' only. We have had assurances that there is no intention of using HGVs which would destroy the lane and make our lives intolerable. We need to be assured that 'operational access' means only very occasional use and with light vehicles. A proposed storage facility adjacent to Cratemans Farm must not provide an excuse for regular use of the lane.	017	Dragons Lane is within the Order Limits for an operational access (Works No. 15) as shown on Sheet 31 of the **Onshore Works Plans [PEPD-005]**. The Land Interest has private rights of access over Dragons Lane, (Plots 31/8, 31/9, 31/11, 31/12, 31/13, 31/14, 31/5, 31/1, 31/2) shown coloured blue on the **Land Plans Onshore [PEPD-003]**, which provides access to their residential property. The Applicant is therefore seeking to acquire a package of Operational Access Rights over Dragons Lane (Works No.15) in respect of Plots 31/8, 31,9, 31/11, 31/12, 31/13), over which the Land Interest has private rights of access to their residential property. The Applicant seeks new rights (i.e. operational access) over Dragons Lane. Operational access rights are defined in Schedule 7 of the **Draft Development Consent Order (DCO) [PEPD-009]** and in summary comprise rights of access with or without vehicles: *"afor the purposes of operation, maintenance and decommissioning of the authorised development".* Examples of the rights are expanded on further in Schedule 7. Consequently, the Applicant is not applying to use the Lane for construction access. The Dragons Lane access (A-58) is defined in Table 23-25 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** as an operational access only for the onshore cable route shown as part of Work No. 15 sheet 27 of the **Onshore Works Plans [PEPD-005]**. There is no route between Dragons Lane and the proposed substation. Paragraphs 23.4.21 and 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** describe the expected operational and maintenance phase activities which includes periodic testing of the cable through attendance by up to three light vehicles such as vans in a day at any one location. Unscheduled maintenance or emergency repair visits for the onshore cable will typically involve a very small number of vehicles, typically light vans. Infrequently, equipment may be required to be replaced, then the use of an occasional HGV may be utilised, depending on the nature of the repair. (Paragraph 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**). In exceptional circumstances during unscheduled maintenance or operational faults, an HGV may be required to support cable repair works. This would be an unlikely worst case scenario that could involve the need to replace a section of cable, for which HGV access may be needed for materials or equipment. In the unlikely event of such a major cable fault in this area, the fault would be investigated and a suitable vehicle arranged for the repair taking into account the access parameters along Dragons Lane. The Applicant is aware of a narrow passage along Dragons Lane that may be prohibitive for HGV-vehicles in the unlikely worst case scenario that could involve the need to replace a section of cabler. HGVs are not anticipated to need to negotiate Dragons Lane for a reasonable worst case scenario. Operational accesses have been

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			identified for light vehicle access for cable maintenance and inspection purposes. Dragons Lane is assessed to provide suitable access for these purposes. The Applicant has provided a response in Action Points 18 and 19, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (Document Reference 8.25) submitted at Examination Deadline 1. The Applicant has provided details on how HGVs would negotiate Dragons Lane in exceptional circumstances during the operational phase of the Proposed Development. Please see the Applicant's response in reference **LI14.4** for comments on the potential storage facility.
LI18.2	Dragon's Lane - motives for purchasing two small strips of land. Rampion have given notice that they propose to earmark two very small strips of land adjacent to two ponds in Dragon's Lane, on the grounds that they are not legally owned by anyone. That in itself needs clarifying. It is essential to know the exact purpose for purchasing this land, assuming it is genuinely not registered for ownership. I asked for an explanation by telephone from Rampion, was assured of a reply within 24 hours and heard nothing. This creates mistrust and the motives must be clarified.		**Plots 31/7 and 31/15 – Unregistered Land** There are two strips of land (Plot Number 31/7 and 31/15) on Dragons Lane which are unregistered. Dragons Lane itself is mostly privately owned except these two strips of land. Plot 31/7 is located between two landholdings in the centre of Dragons Lane and the freehold ownership is unknown (it is unregistered on the Land Registry). It does not fall within the adopted highway. Plot 31/15 is located at the entrance to Dragons Lane and the freehold ownership is unknown (it is unregistered on the Land Registry). To the east of the plot is Dragons Lane which is majority privately owned. Plot 31/15 also falls within the adopted highway as part of Henfield Road (A281). Dragons Lane (including Plots 31/7 and 31/15), is within the Order Limits for an operational access (Works No.15). The Applicant seeks news rights (i.e. operational access) over Dragons Lane, for this purpose, but does not propose to acquire the land. The rights sought by the Applicant will be exercised in common with existing private rights of access and will be entirely consistent with the existing use of the land as an access road. The Applicant will not own the road and it is not intending to purchase Plot 31/7 or 31/5. Operational Access Rights are defined in Schedule 7 of the **Draft Development Consent Order (DCO)** **[PEPD-009]** and in summary comprise rights of access with or without vehicles and equipment: *for the purposes of operation, maintenance and decommissioning of the authorised development*". The rights are expanded on further in Schedule 7. Operational access (for light personnel or 4x4 vehicles) will be required throughout the project's lifetime, for inspections and maintenance of the cable route. It is anticipated that the Applicant would need to access the lane by either walking or driving, to carry out occasional maintenance responsibilities. As Plots 31/7 and 31/15 are within the proposed Order Limits (as a proposed operational access), the Applicant followed a process to ascertain who owns the land, including by placing notices pursuant to Section 42 of the Planning Act 2008 on

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			Dragons Lane which have been seen by the Land Interest. These were placed on site between June 2021 and September 2021 during the project wide Statutory Consultation, and October 2022 and November 2022 during the onshore Statutory Consultation, requesting for someone to come forward if they believed they owned the land. An additional notice pursuant to Section 56 of the Planning Act 2008 was placed on site between September 2023 and November 2023 providing notification that the project had been accepted for examination by the Planning Inspectorate.
LI18.3	3. Protecting environment, landscape and nature: Several years ago the Chair of the former Countryside Commission (the late Sir John Johnson) walked with me down Dragon's Lane and along the public footpaths across Cowfold stream. He told me that he was staggered to find an area of pure countryside with such flourishing of nature, birds, trees, water and hedgerows. He was deeply impressed that this was still possible only 40 miles from London. There is no doubt that the proposed Rampion route would do irreparable damage to birdlife, (eg Nightingales, Turtle Doves, moths and butterflies) and the destruction of hedgerows, trees and pastures (unaffected by chemicals) on the Cratemans Farm. Once destroyed, it can never be quite the same again. In addition, to close public footpaths on Cratemans Farm will prevent the public from enjoying this special environment during the cable line construction.		The Applicant notes the issues raised in this relevant representation. Terrestrial ecology and nature conservation and Landscape and Visual impact matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'** (below), with further information responded to by the Applicant in **Table 6.3 'Ecology'** (below). The matters provided within this Relevant Representation regarding impacts to public rights of way have been responded to by the Applicant in **Table 6.26 'Impacts on Public Rights of Way'** (below).
LI18.4	4. A272 traffic east of Cowfold and Oakendene estate: Cowfold already faces severe traffic pollution. The plans for a sub-station on the Oakendene estate will cause immense additional problems of delays, noise and pollution in Cowfold and on the A272 – a road which is used by all who live in Cowfold parish.		Please see the Applicant's response in reference **LI17.1** (above) for details of assessments completed and predicted traffic impacts of the Proposed Development on the A272 and Cowfold **Table 6.2 'Environment and disturbance'** (below).
LI18.5	5. A better route: The present proposals mean a longer route and additional spoiliation of the countryside by not sharing the Rampion One route and going direct to Wineham for the sub-station. This means further unnecessary damage to the environment.		The Applicant notes the issues raised in this relevant representation. The Applicant has provided further information on the decision to discount the Wineham Lane North site for the onshore substation (see Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (**Document reference 8.25**) (submitted at Examination Deadline 1). Route alternatives and sifting matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.4 'Route / Alternatives'** (below). Matters relating to the Oakendene Substation raised within this Relevant Representation have been responded to by the Applicant in **Table 6.20 'Design and siting of the onshore substation at Oakendene'** (below) (see Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (**Document reference 8.25**) (submitted at Examination Deadline 1).
LI18.5	6. Density of population in the south and need to preserve precious countryside: We are one of the most densely populated countries in Europe compared to Germany and		The DCO application is supported by a full Environmental Statement that assesses the impacts of the Proposed Development on the environment. The National Policy

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	France. In taking important measures on climate change, we can no longer afford to do this at the expense of the preservation of the countryside which is valued in all rural areas and by many living in cities and towns. The planning process needs to carry out the most rigorous examination of the proposals to ensure the least possible damage to valuable and ever declining countryside.		Statements set a policy framework, including for developments that impact on the countryside, that the Proposed Development will be assessed against.

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Table LI19 Applicant's Response to Mark Renny [RR-224]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI19.1	I am writing to you with our ongoing specific concerns regarding the Rampion Extension that has proposed a temporary access road; pipeline or combination of both on the field directly North of our property at Brookside Holiday Camp Limited, BN17 7QE. We had a consultation meeting with RWE and Carter Jonas at Littlehampton in July 2021. Subsequent plans were made for consultation showing a pipeline through the middle of the field to the North of the park which (to my eyes) were preferable to the access road and the latest plans show a sort of combination of both previous ones; I have also had a meeting with Nigel Abbott today where those multi-layered plans have been described as to give the project "Optionality" (27th October 2023). I would like to make ongoing feedback as below:- • We are a long-established (since the 1930s and under our family ownership since 1962) family holiday caravan park; we own purely the one site which extends over 8.25 acres and comprises of 120 static holiday caravans and one holiday bungalow. Some of our owners have been with us since shortly after the date we took over and all are extremely valued (as we are to them as their choice of location for their holiday home from home). Whilst we are in favour of the new project in principle, and wind-power as a sustainable power for the future in the quest to become carbon neutral by 2030 (now 2050 I understand), we believe that the location for the proposed access road is entirely unsuitable for the following reasons:-	019	The Applicant understands that Mark Renny is a Director of Brookside Holiday Camp Limited (the landowner) and lives in a bungalow on-site It is not clear whether the relevant representation has been made in a personal capacity, i.e. having regard to the Land Interest's residential occupation of the bungalow, or is made on behalf of Brookside Holiday Camp Limited. In this regard, the Applicant note that a separate representation has been made by the company (see the Applicant's response in **Table LI26 Applicant's Response to Brookside Holiday Camp Limited [RR-050]** which owns the caravan park. Furthermore, it is not clear whether Mr Renny owns or has any land interest in the bungalow which he occupies. In any event temporary powers are sought for works affecting the subsoil to a part width of adopted highway (roadside verge) that is proposed to be used for a temporary construction access (Plot 4/11), works no. 13 (temporary construction access). Details of the temporary construction access that affects the access to the caravan park are shown on Sheet 4 of the **Onshore Works Plans [PEPD-005]**.
LI19.2	• 25 holiday caravans back onto the field and one holiday bungalow. The boundary is a hedge and a ditch. The construction of the caravans is of thin metal and the proposed proximity and noise would be extremely detrimental to our holidaymakers enjoyment of their 'special place'. Lots of our owners come from London and the surrounding areas and live in flats; their caravan is their 'garden', their space away from the hustle and bustle of everyday life and I am told that their mental health benefits from being them being here, and stress levels as a result are much lower. Our holiday bungalow is rented out on a weekly basis at a not inconsiderable cost, and I cannot see many people making bookings if a busy access road is constructed only yards away from the rear garden. We have read that legal operational times of these types of road are 7am to 7pm Monday to Friday and 8am to 1pm on a Saturday – this would be totally disruptive to caravan owners and holidaymakers and possibly negate any reason that they have to actually have a holiday caravan here (there is not a lot of holiday accommodation in the local Arundel/Littlehampton area of this type either!). Many owners might decide to sell up if the proposed road were to go ahead. This could prove financially disastrous for us, especially following 16 months of COVID-19 restrictions already impacting our sales and bookings.		The Applicant notes the issues raised in this relevant representation. The Applicant has undertaken an Environmental Impact Assessment (EIA) of the Proposed Development to consider and assess the likely significant effects of the Proposed Development. The Development Consent Order (DCO) Application includes a series of documents that address the potential effects of noise on human receptors. These include the following aspect chapters: • **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]**; • **Chapter 21: Noise and vibration, Volume 2** of the ES **[APP-062]**; and • **Chapter 28: Population and human health, Volume 2** of the ES **[APP-069]**. Section 21.15 in **Chapter 21: Noise and vibration, Volume 2** of the ES **[APP-062]** assessment concluded that the potential effect during the construction phase will be negligible to minor adverse following the implementation of embedded environmental measures, which is not significant in terms of EIA. All environmental matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.9 'Brookside Caravan Park'** (below). The Applicant acknowledges this request for a change in working hours and has updated the **Commitments Register [APP-254]** (C-22) at Examination Deadline 1

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			to include the use of shoulder hours. This will also be updated and secured in the **Outline Code of Construction Practice (CoCP) [PEPD-033]** at the next submission of this document.
LI19.3	• We are concerned about the noise every time anything goes over the proposed access road and the dust pollution that it would cause. Your document, Rampion 2 Volume 2, Chapter 22 (22.9.43) states that predicted noise levels would be 85dB at the nearest points (our level appears to be amongst the highest indicating our proximity, and putting predicted noise levels on a par with a diesel truck at 40mph at 50ft(84dB). Mr. Nigel Abbott of Carter Jonas has said today (27th October 2023) at a meeting with myself, that he would recommend that works to the field North of us would be preferred to take place during the Winter months i.e. October to the end of March in order that disruption and noise etc to our caravan owners would be kept to a minimum. He has also said that noise reduction or bunding measures would still be something that could be used by Rampion2 to mitigate noise and dust and that the timescale of that particular part of the project should be achievable in a six month timeframe.		The Applicant notes the issues raised in this relevant representation. All environmental matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.9 'Brookside Caravan Park'** (below). Further information regarding matters relating to construction practices and project commitments are raised within this Relevant Representation have been responded to by the Applicant in **Table 6-9: Brookside Caravan Park** (below) and in **Table 6-2 Environment and disturbance** (below).
LI19.4	• Nevertheless, we are concerned about the potential weight of vehicles that would use the proposed access road bearing in mind that the bungalow at Brookside has been underpinned several times (it's latest remedial work was completed in June 2021) and is prone to cracking; static caravan bases are not especially thick. We estimate an excavator to weigh 30 Tonnes and a low-loader to weigh 15 Tonnes so there is the potential for 45 Tonne weights going up the access road and causing structural damage to both caravan bases and the bungalow.		Further information regarding matters relating to construction practices, including at the accesses, and project commitments that are raised within this Relevant Representation have been responded to by the Applicant in **Table 6.9 'Brookside Caravan Park'** (below) and in **Table 6.2 'Environment and disturbance'** (below).
LI19.5	• According to the plan at present, the proposed access road would be very close to our hedge and thus to certain caravan owners bedroom windows (many of which open out onto the field North of us which has no public access along the edge of the field but rather diagonally though South East to North West at present; this could potentially cause privacy issues in the most intimate of settings and also potential security issues with unknown persons using the access road right by privately owned caravans.		The Applicant notes the issues raised in this relevant representation. Construction impact matters provided within this Relevant Representations have been responded to by the Applicant in **Table MPB9 'Brookside Caravan Park'** (below) and in **Table MPB2 'Environment and disturbance** (below). As described in this table, a number of management plans **[APP-223 to APP-242]** have been included in the DCO Application such as **Outline Code of Construction Practice (CoCP) [PEPD-033]** which provide the details of the proposed embedded environmental measures to manage effects during the construction stage. The Applicant can confirm that appropriate security will be provided at the permanent substation site. Section 4.6 of the **Outline CoCP [PEPD-033]** provides details for site security, screening and fencing.
LI19.6	• The fire/drainage ditch between Brookside and the field North of us would also be vulnerable to collapse due to soil vibration.		Further environmental matters raised within this Relevant Representation have been covered in **Table 6.9 'Brookside Caravan Park'** below. New Commitment 287 (See **Commitments Register [APP-254]**, submitted at Examination Deadline 1) sets out proposals for an acoustic barrier between the works and the Caravan Park. The Applicant notes the reference to construction

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			works being carried out in winter but this is not considered to be required by the Applicant taking into account the above impacts and mitigation measures.
LI19.7	• We believe that the access from the public road (A284) at the proposed location is too narrow for lorries to turn (or reverse) into (your spokesperson at the 2021 meeting, Eleri Wilce, mentioned that the proposed plans were initially scoped by Google Maps/Earth as site visits were not viable during the COVID-19 lockdown but following our concerns, a site visit was something that she would definitely plan to ascertain why we think it is totally unsuitable to put an access road in the proposed location).		The A284 provides access to the following junctions related to the Proposed Development: • A-13: A construction and operational access on the eastern side of the A284 north of Brookside Caravan Park and opposite access A-11. • A-12: A construction access on the western side of the A284 located approximately 60m north of the boundary of Brookside Caravan Park. • A-11: An operational only access on the western side of the A284 located directly north of Brookside Caravan Park. • A-14: A light construction and operational access on the south eastern side of the A284 in Lyminster village. As detailed within the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]** All temporary construction accesses will be designed to follow design standards contained within the Design Manual for Road s and Bridges and to meet relevant West Sussex County Council requirements. Detailed design of these accesses will form part of stage specific CTMP secured pursuant to Requirement 24(1)(a) of the **Draft Development Consent Order (DCO) [PEPD-009]**.
LI19.8	• We still believe that a more suitable location for an access road could be found further North towards Arundel. However, if the field to the North of us was to be used, then there is a more suitable location for an access road at the far North side of the field where residential house owners have long gardens providing better distance and screening with regard to noise pollution (apart from Lullynge Cottage at the front) and, of course, bricks and mortar sound proofing. Again, Mr. Abbott today suggested that the entrance to the field might be made more centrally or to the Northern part of the field rather than the Southern part where there is currently a stile and farm gate.		The closest construction access junctions to Brookside Caravan Park on the western side of the A284 is A-12 located approximately 60m north of the Caravan Park boundary as shown on Sheet 7 of the **Access, Rights of Way and Street Plans [APP-012]**. For clarity, access A-11 located immediately north of the Caravan Park boundary is for operational purposes only as shown on the **Onshore Works Plan** sheet 5 **[PEPD-005]**. Operational access requirements will be minimal with scheduled maintenance of the onshore cable route required every 2-5 years generating approximately three LGVs for one day. Some unscheduled or emergency repair visits may also be required but this also typically involve a very small number of LGVs. With respect to noise effects at the caravan park, **Chapter 21 Noise and Vibration, Volume 2** of the ES **[PEPD-018]** assesses the impact of noise and vibration from the construction works at receptor reference HDD-05SW. This is shown on Figure 21.2c of the **Chapter 21: Noise and Vibration, Volume 3** of the ES **[PEPD-022]**. The assessment concludes that with the embedded environmental measures secured in the **Outline Code of Construction Practice (CoCP) [PEPD-033]** that there would be no significant effect at the caravan park. In response to the concerns raised by caravan owners in their relevant representations, the submission of revision B of the **Outline CoCP [PEPD-033]** at the pre-examination includes a new commitment C-287 to provide an acoustic barrier at the southern edge of the construction works. The details of this will be confirmed in the Noise

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			and Vibration Management Plan that will accompany the stage specific CoCP as per requirement 22 (5) (h) of the **Draft Development Consent Order (DCO) [PEPD-009]**.
LI19.9	• We are also concerned about disturbance to the local wildlife which includes water voles in the reed bed and ditch between the park and the field North of us; disruption of habitat which is normally soft, undisturbed earth which they can burrow into easily amongst tall grasses and reed beds.		Terrestrial ecological matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.9 'Brookside Caravan Park'** (below).
LI19.10	• We already see the A284 as an extremely busy road at certain times of the day, with vehicle queuing, especially when the level crossing at Wick (Lyminster crossing) gates are down (often during the day and even more so with the level of road and housing construction in the area and for the foreseeable future) causes huge tailbacks to the North well past our entrance. This proposed access road could seriously impact on an already overloaded stretch of road.		As part of the DCO process a thorough assessment of the likely impact of traffic upon the local road network and highway assets during the construction phase of works has been completed. Traffic volumes on the A284 have been observed and presented in **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES (**Document reference: 6.2.32**). Further information has been provided by the Applicant in **Table 6.2 'Environment and disturbance'**, with further information provided in the **Table 6.1 'Traffic'** (below). Within the ES **Chapter 23:Transport, Volume 2 [APP-064]** and **Chapter 32: ES addendum, Volume 2** of the ES (**Document reference: 6.2.32**) the impacts on Lyminster village (receptor 7) have been reported. This has identified a worst-case increase in HGV traffic of 7.1% during construction phase of the Proposed Development. It is also noted that the Proposed Development is estimated to generate a 878 HGV two-way movements on the A284 across the entire construction programme, which compares to a baseline HGV traffic flow on the A284 of approximately 700 HGVs per day. It is therefore concluded that the proposed development would not generate any significant environmental effects on the A284. The proposed routing strategy is further detailed in the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]**. The CTMP would be secured by Requirement 5 of the **Draft Development Consent Order (DCO) [PEPD-009]**. Matters relating to construction practices and project commitments are raised within this Relevant Representation have been covered in **Table 6.2 'Environment and disturbance'** (below).
LI19.11	• Originally, we were told that the proposed access road would be temporary but don't know the predicted timeframe for an access road being constructed or being in place (we were later told that it would take about six months to construct? In a consultation at Littlehampton in 2022 at the Town Hall Chamber, Mr. Abbott said that an access road would be kept after the project was completed and would possibly used once a month or so for a Jeep or 4x4 to go down to the plant area by the Arun to check on operations etc. He also said at this point that an access road would prevent any future potential development in the field (i.e. farmers building houses) from being		**Operational Access A11** The Operational Access A11 is routed along the northern boundary of the caravan park in a distinct corridor as part of the Proposed DCO Order Limits and indicated on the **Onshore Works Plans [PEPD-005]** as part of Works No 15. This operational access will be used exclusively for infrequent maintenance and inspection access to the cable easement during operation. It will not be used for construction purposes / HGV access during the construction phase. Details on the

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	built too close to our boundary. Lots of discussive 'ifs and buts' but obviously not his purview beyond the scope of this project.		use of operational accesses are outlined in Section 4.8 'Operation and maintenance' of **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**. **Temporary Construction Access A12** Construction access towards the west from the A284 is via a temporary construction access as indicated in Table 4-1 in the **Outline Construction Traffic Management Plan** in Section 4.8 ‚Proposed Access Strategy' **[PEPD-035a]**. Temporary construction accesses will be removed or reinstated to existing layouts / condition post-construction.

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Table LI20 NOT IN USE

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Table LI21 Applicant's Response to Jeremy Smethurst [RR-168]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI21.1	I strongly object to the Rampion 2 proposals for the Oakendene substation. As a resident affected by the project, I did not know anything about it until I received a Section 42 letter in October 2022. There was an almost complete lack of information in Cowfold and the location was referred to as Bolney or Wineham and never Oakendene until the decision had been made. I also feel that the alternative site at Wineham would be a hugely better choice of substation site based on my comments below. The cable route direct to Wineham would be more direct and therefore damage far less distance of beautiful Sussex countryside.	020 Add standard line about consultations that has been produced for the Ips.	**Context** Details of the proposals in this location are shown on Sheet 33 of the **Onshore Works Plans [PEPD-005]**. The Land Interest owns land to the north of the A272. The Land Interest's title borders an A road to the south (the A272) which is adopted highway. The Applicant identified the Land Interest as a presumed owner of part width of the subsoil of that highway comprising plot 33/19 (which is unregistered), as shown coloured blue on the **Land Plans Onshore [PEPD-003]**. The Land Interest was consulted on that basis on 14 October 2022. The Land Interest wrote to the Applicant in response to the public consultation. Plot 33/19 is included within the Order Limits for both construction and operational access (Works No.14) to the Oakendene substation and therefore a package of Construction and Operational Access Rights is proposed to be compulsorily acquired over this Plot. Those rights are defined in Schedule 7 to the **Draft Development Consent Order (DCO) [PEPD-009]**. **Consultation and Engagement** Chapter 6 of the **Consultation Report [APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. For further information please see document 'Promotion of Rampion 2 Consultations in and around Cowfold 2021-2022'. This documented is appended at **Appendix 15 Promotion of Rampion 2 Consultations in and around Cowfold 2021-2022**. The Applicant consulted with Mr and Mrs Smethurst by letter on 14 October 2022 as part of the Rampion 2 Second Round of Statutory Consultation as they were believed to potentially have a land interest. Mr and Mrs Smethurst were sent 2 sets of works plans, the first set being the original set of works plans published in the first Statutory Consultation and the second set comprising the plans subject to the second Statutory Consultation (18 October – 29 November 2022). Mr and Mrs Smethurst were sent a Statutory Consultation pack because of their presumed ownership of part width of subsoil to the A272, which forms part of the proposed visibility splay on the A272 close to its junction with the newly proposed access road into the proposed Oakendene substation. New rights are sought over this land because, subject to detailed design, it is required for traffic management measures which will be set out in the Traffic Management Plan to

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		be prepared before any construction takes place. This may include. signage and vegetation management. **Substation Selection** Matters relating to the cable route and Oakendene Substation alternatives raised within this Relevant Representation have been responded to by the Applicant in **Table 6.4 'Route / Alternatives'** (below) and **Table 6.20 'Design and siting of the onshore substation at Oakendene'** (below) and further information is available in Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (**Document reference 8.25**) submitted at Examination Deadline 1.
LI21.2	In the Consultation Report (doc ref 5.1) section 5.3.13, Rampion justify the lack of Section 42 letters to much of Cowfold in the first round of consultation by saying, everyone who should have been sent a Section 42 letter got at least one during the whole consultation. For Cowfold, this cannot be acceptable as key decisions were made in the first round ie choice of the substation site. Effectively therefore Cowfold Residents were neither consulted nor indeed even aware of the potential proposal for Oakendene. This resulted in Rampion's failure to properly consider the impact of their choice of substation site (with the benefit of local knowledge) or to look properly at the alternative locations.	The relevant representation raises issues surrounding consultation in the Cowfold area. For further information please see **Appendix 15 Promotion of Rampion 2 Consultations in and around Cowfold 2021-2022**.
LI21.3	Size was included as one of the reasons for choosing Oakendene. Yet all three sites originally considered were all big enough by some margin. This was just a 'nice to have' rather than an acceptable reason for choice. They have also failed to give convincing reasons based on any engineering or other impacts for their choice of Substation location.	Matters relating to the Oakendene Substation alternatives raised within this Relevant Representation have been covered in **Table 6.20 'Design and siting of the onshore substation at Oakendene' (Document Reference 8.24)** and further information is available in Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (**Document reference 8.25**) submitted at Examination Deadline 1**.**
LI21.4	This proposal will have an enormous detrimental impact on local communities in terms of: their daily lives, both during and after the construction, the local economy and on the wildlife and landscapes we are meant to be trying to make more resilient to climate change. Therefore, at this location, I strongly believe that the adverse impacts outweigh the benefits.	The Applicant notes the issues raised in this relevant representation. Matters relating to the Oakendene Substation raised within this Relevant Representation have been covered in **Table 6.20 'Design and siting of the onshore substation at Oakendene'** and further information is available in Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (**Document reference 8.25**) submitted at Examination Deadline 1. Environmental impact matters raised within this Relevant Representation have been covered in **Table 6.2 'Environment and disturbance'** below.
LI21.5	The core working hours are far too long; 7am to 7pm – 5 days/week with 8am to 1pm on Saturday, plus an hour either side will give no respite from the traffic or the noise.	The Applicant acknowledges this request for a change in working hours and has updated the **Commitments Register [APP-254]** (C-22) at Examination Deadline 1 to include the use of shoulder hours. This will also be updated and secured in the **Outline Code of Construction Practice (CoCP) [PEPD-033]** at the next submission of this document.
LI21.6	I believe they have played down the implications for the effects on human health and wellbeing, the effects on the daily lives of a large number of people, the	**Chapter 28: Population and human health, Volume 2** of the ES **[APP-069]** draws from and builds upon key outputs from **Chapter 18: Landscape and**

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	visual effect on the landscape, and the destruction of precious, though undesignated, wildlife habitats between Oakendene and the A281.	**visual impact, Volume 2** of the ES **[APP-059]** to establish the potential health and wellbeing impacts associated with changes in the visual environment during construction and operation of the Oakendene substation. The only relevant settlement from which views could be affected is Cowfold. However, construction works/the final operational substation structure will not be visible from any part of Cowfold village due to screening from intervening landform and the layering effect of intervening vegetation, even in the winter. Therefore, there would be no health/wellbeing impacts from a loss of amenity for residential receptors. The population and health assessment also considers how changes in the visual environment affects walkers/cyclists/horse riders/joggers/others on recreational routes such as PRoW, and whether or not this is sufficient to influence health and wellbeing through uptake of physical activity/recreation. Any visual impacts experienced on these routes during construction or operation are not anticipated to deter users from using these specific or similar routes and therefore there would be no health/wellbeing impacts.
LI21.7	Ecology: I am seriously concerned about the lack of proper consideration given to the wildlife at Oakendene and the northern cable route, and that environmental issues at Cowfold have effectively been sidelined: • During the first consultation there was little data for this area available so wildlife charities could not comment much. In the second round, the focus was on the cable route, particularly the SDNP, so again insufficient attention was given to Oakendene. • WSCC and Horsham DC have complained about the lack of data sharing by Rampion prior to Acceptance, and now are concerned they have insufficient time to assess the information, as are the various wildlife trusts. This is made worse by the concurrent Gatwick Runway proposals and other concurrent planning issues in Sussex. • It would appear from the submitted documents that there are too many omissions, inaccuracies and caveats in the studies they have done, to allow proper assessment of the evidence. Too many say the land in question was 'inaccessible or only partially accessible' to allow proper comparisons of populations or species. • Much of the data for Oakendene and Cowfold appears to have been collected after the choice of substation site was made and therefore the decision cannot have taken this into account. • Why choose a site for the substation right next to a beautiful large lake, in an area with so many Important Hedgerows in such close proximity, and so many red list species and endangered habitats? Indeed, in the DCO documents, for several species, Oakendene is the only location where they have been found. This surely indicates the ancient and biodiverse nature of this landscape? • When Britain's wildlife is in crisis, why choose a site which will destroy a dense area of nightingale breeding sites and meadowland? Why have	The Applicant notes the issues raised in this relevant representation. Terrestrial ecology and nature conservation matters raised within this Relevant Representation have been covered in **Table 6.2 'Environment and disturbance'**, with further information provided in the **Table 6.3 'Ecology'** below. The Applicant notes the issues raised in this relevant representation. Matters relating to the Oakendene Substation raised within this Relevant Representation have been covered in **Table 6.20 'Design and siting of the onshore substation at Oakendene'** and further information is available in Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (Document reference 8.25) submitted at Examination Deadline 1**.**

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	they said only 7 veteran trees are to be found across the whole proposed development? My experience of this area is that there are a huge number of valuable trees in the northern cable route and the substation site alone which will be removed under Rampion's proposals. • There is a high voltage cable running under the A272 and across the northern part of the Oakendene site. It is not clear if Rampion2 have confirmed with UKPN the exact location and that any proposals for roads, hardstanding, planting, bunding, excavation etc are acceptable to UKPN? The oil-based coolant for the cable has leaked in the past contaminating the stream and lake. Now there will be three such cables close to or crossing the water, increasing the risk.	
LI21.8	Traffic: • Traffic is a serious concern for not only those in the immediate vicinity, but for the whole village and anyone who uses the A272 regularly. This is in striking contrast to the situation at Wineham Lane, where nobody raised traffic on the A272 in the Rampion 1 relevant representations. Indeed, there were no Relevant Representations from Bolney village at all, just from Wineham Lane. Far fewer people were really impacted and hardly any to the extent that is occurring widely as a result of the traffic in this case. • There is much more congestion as one approaches Cowfold, this project is much larger than Rampion 1 and the movements of vehicles in and out of Kent Street, Oakendene and the western compound will be much more complex than just entering and leaving Wineham Lane, yet no holding area to control the traffic has been deemed necessary, whereas it was for Rampion 1. I do not believe Rampion have carried out appropriate studies on traffic flow and pollution. Nor have they considered the accident rates at this particular part of the A272 which are frequent. • Kent Street has a width restriction of 6'6" and is totally unsuitable for heavy traffic yet is being used to access the cable route and to avoid the AQMA in Cowfold. Throughout the autumn and winter the verges are wet and are destroyed. • On Fri 20 -Sun 22 Oct 2023 there was a good example of what happens when the road is either blocked or very slow moving, which is not at all unusual. Due to a blockage, eastbound traffic was using either Picts Lane or Kent Street at the crossroads just east of Oakendene. Huge trucks were also using these roads which are both totally unsuitable. As the verges were very wet due to recent bad weather vehicles became bogged in and unable to move if they pulled off the single track carriageways. I have attached some photographs of the chaos that was caused. • The true extent of the use of the AQMA in Cowfold by Rampion traffic is very vague and difficult to assess. Terms such as: 'avoid where possible', are not helpful. It also appears that Light Goods Vehicles 'may include vehicles up to 7.5T': which is not very light. But it is clear that there will be a significant increase in volume of construction traffic through Cowfold	For traffic related points please refer to the response provided to **LI17.1** above. Impacts from road traffic emissions at s**ensitive** receptor locations within Cowfold, and Cowfold AQMA specifically, have been assessed and are reported within **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]**. The air dispersion traffic modelling used traffic data based on annual peak daily traffic, rather the annual average daily traffic stipulated in the Defra guidance. Therefore, the completed assessment was highly conservative. Impacts from emissions of NO_2, PM_{10} and $PM_{2.5}$ were considered. The assessment concluded that the impact from construction traffic emissions is negligible at all sensitive receptor locations, including residential receptors within the AQMA. Route alternatives and sifting matters provided within this Relevant Representations have been addressed in **Table 6.4 'Route / Alternatives'** below.

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	both on the A281 and the A272 roads through the village. Battery storage farm:	
LI21.9	A planning application has also been made to Horsham District Council for a battery storage farm next to the substation site at Oakendene. (HDC Planning Ref EIA/23/0006). It is not included in their assessment of cumulative effects. Although any involvement by Rampion has been denied by Vicki Portwain and Lucy Tebbutt, there MUST surely be collaboration between these projects as the location lies right over the top of the cable route and the application suggests that it will use the same trench to be connected: “The Site, excluding the underground cable route to the Point of Connection, comprises land totalling approximately three hectares (see Location Plan at Appendix 1) set within well-established hedgerow and tree planting. The Site will be connected via an underground cable route to the Point of Connection at Bolney National Grid Substation, located approximately 1km to the south-east of the Site.” Although alone, a battery storage farm application would normally be a matter for local planning, the cumulative impact must be considered and the plan should therefore be seen as part of the DCO application, and as it does NOT currently form part of it, the DCO application should be re-submitted.	The Applicant has confirmed that Rampion Extension Development Ltd does not have a financial interest in a battery storage project adjacent to Oakendene substation. The battery storage scheme is not being promoted by the Applicant and there is no basis on which should form part of the DCO as suggested by the Land Interest. The Screening application (EIA/23/0006) was submitted to Horsham DC on 13th September 2023 and the application (DM/24/0136) was submitted to Mid Sussex District Council on 11th January 2024. As a result, this application has not been included within the Environmental Statement as it has been submitted after the Rampion 2 DCO Application submission.
LI21.10	Flooding: The whole area of Oakendene (not just the Cowfold stream, and the lake) is regularly flooded in times of heavy rain; as can indeed be seen from the Flooding maps that Rampion provide. This makes it very difficult for any wheeled vehicles to go off hardstanding or roads. • There is a culvert running under the A272 which then drains into a ditch running north to south through the proposed substation site, if this is blocked by the development, which is likely as the main Rampion entrance to the site is very close to it, this will most likely cause further flooding to properties already at risk on the north side of the road. • The proposed site is very close to the Cowfold stream which is regularly flooded in periods of heavy rain. If most of the site is to be hardstanding, the ability of the ground to absorb any excess water will be significantly reduced, which is likely to affect the water levels downstream and the River Adur. Until the submission of the DCO, Rampion has denied that there is any problem with flooding at Oakendene. However their proposed site plan now includes flood protection measures on three sides. This will also surely affect the flow of water into Cowfold Stream, (a tributary of the River Adur), and may affect the existing underground cable. • As a consequence of the flooding, it is important to understand the effective ‘Ground Level’ for the substation site. If this were to be raised from the existing level, it would have substantial effect on the visual impact. Indeed, from the ‘consultation’ Information Event in Cowfold, I was told that the ground level for the construction could even be lowered to reduce the visual impact. This is now clearly nonsense. • There is no mention of flooding problems at the potential alternative site at Wineham.	The indicative site layout has been developed accordingly, taking risk of flooding into account. The Applicant is confident that the precautionary approach in **Appendix 26.2: Flood Risk Assessment (FRA), Volume 4 o**f the ES **[APP-216]** and **Outline Operational Drainage Plan [APP-223]** will ensure the substation will not be at flood risk, nor increase flood risk elsewhere. Meetings were held with West Sussex County Council (WSCC, as the Lead Local Flood Authority (LLFA)), Horsham District Council (HDC, as the LPA) throughout stakeholder consultation to understand local sources of flood risk at the Oakendene site. Assessment of flood risk to the substation has been based on the EA Risk of Flooding from Surface Water (RoFSW) mapping, as detailed in Paragraph 5.7.14 of **Appendix 26.2: FRA Volume 4** of the ES **[APP-216]**. The substation footprint avoids the RoFSW 0.1% AEP (1 in 1,000 year return period) extent for the watercourse to the south of the site (tributary of the Cowfold Stream), as agreed with WSCC as a suitable approach. The substation is also situated well outside of the flood extent associated with the downstream lake. The Applicant notes and appreciates the information regarding the local ground conditions and winter waterlogging of the ground at the Oakendene substation site. Numerous embedded environmental measures have been set out in 7.22 **Commitments Register [APP-254]** (C-28, C-73, C-140, C-77, C-134 and C-141) for the management of surface water within the Proposed Development during both the construction and operational phase, including the **Outline Code of Construction Practice (CoCP) [PEPD-033]**. Section 5.10.9 of the **Outline CoCP [PEPD-033]** sets out the requirements for the Construction Phase Drainage Plan, stating:

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"Details of construction phase drainage will be developed by the Contractor(s) and will be presented in a Construction Phase Drainage Plan and approved as part of the stage specific CoCP. This will be developed following detailed drainage investigations and hydrological assessments to determine potential location-specific risks in relation to the water environment and identify appropriate measures to avoid or reduce risk. .... Details of the Construction Phase Drainage Plan will be subject to consultation with WSCC (and other relevant consenting authorities including the Environment Agency) prior to the start of construction."

These measures will ensure that surface water will be managed onsite to drain the site appropriately and mitigate against the potential for waterlogged ground, whilst ensuring that discharges remain at pre-development rates (to ensure there will be no detrimental impact to downstream flood risk) and avoiding impact on the local environment.

This anecdotal information regarding winter waterlogging of the ground at the substation site can be considered further as necessary in the development of the Construction Phase Drainage Plan, by the contractor ahead of and during the construction phase. In the event of extreme rainfall and ground conditions being unworkable, construction works will cease in accordance with embedded measure C-233 in the **Commitments Register** **[APP-254]** (updated at Examination Deadline 1).

With regard to the potential for culvert blockage, a wide range of environmental measures have been embedded into the Proposed Development to minimise the potential for changes in watercourse conveyance from blockages or the mobilisation of silt laden runoff entering the watercourses. Environmental measures include C-28, C-73, C-130, C-133, C-135 and C-176, provided in **Commitments Register** **[APP-254]** (updated at Examination Deadline 1).

With regard to the impact of the development to surface water runoff and downstream flood risk, the **Outline Operational Drainage Plan** **[APP-223]** sets out the drainage strategy for managing surface water run-on and runoff from the substation throughout the operational lifetime of the development. The proposed Sustainable Drainage (SuDS) measures as shown in the Indicative SuDS Plan in Appendix A provide the proposed approach for discharges being limited to greenfield QBAR (mean annual flood) rates and/or two l/s/ha (whichever is greater). These measures would ensure that surface water runoff rates remain unchanged (and for more extreme events, reduced) from the current greenfield rate.

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Table LI22 Applicant's Response to Meera Smethurst [RR-236]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI22.1	I object most strongly to the proposals. I do not believe the adverse impacts of Rampion 2 are outweighed by the benefits. Although living in the immediate vicinity of the proposed Oakendene substation site, and potentially directly affected by it, I had no information about it until receiving a recorded delivery Section 42 letter and maps in October 22. The same was true for many others in the immediate vicinity and the RH13 8AZ postcode also, if they received anything at all. You may argue that people don't remember receiving leaflets and put them in the bin unread, but it is difficult to ignore a large package sent by recorded delivery: we did not get them. There was widespread ignorance of the proposals in Cowfold as a whole until after the whole consultation ended.	021	**Context** Details of the proposals in this location are shown on Sheet 33 of the **Onshore Works Plans [PEPD-005]**. The Land Interest owns land to the north of the A272. The Land Interest's title borders an A road to the south (the A272) which is adopted highway. The Applicant identified the Land Interest as a presumed owner of part width of the subsoil of that highway comprising plot 33/19 (which is unregistered), as shown coloured blue on the **Land Plans Onshore [PEPD-003]**. The Land Interest was consulted on that basis on 14 October 2022. The Land Interest wrote to the Applicant in response to the Statutory Consultation. Plot 33/19 is included within the Order Limits for both construction and operational access (Works No.14) to the Oakendene substation and therefore a package of Construction and Operational Access Rights is proposed to be compulsorily acquired over this Plot. Those rights are defined in Schedule 7 to the **Draft** Development Consent Order (DCO) [PEPD-009]. **Consultation & Engagement** Chapter 6 of the **Consultation Report [APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. For further information please see **Appendix 15 Promotion of Rampion 2 Consultations in and around Cowfold 2021-2022**. The Applicant consulted with Mr and Mrs Smethurst by letter on 14 October 2022 as part of the Rampion 2 Second Round of Statutory Consultation as they were believed to potentially have a land interest. Mr and Mrs Smethurst were sent 2 sets of works plans, the first set being the original set of works plans published in 2021 and the second set comprising the plans subject to the second Statutory Consultation (18 October – 29 November 2022). Mr and Mrs Smethurst were sent a statutory consultation pack because of their presumed ownership of part width of subsoil to the A272, which forms part of the proposed visibility splay on the A272 close to its junction with the newly proposed access road into the proposed Oakendene substation. New rights are sought over this land because, subject to detailed design, it is required for traffic management measures which will be set out in the Traffic Management Plan to be prepared before any construction takes place. This may include signage and vegetation management .

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI22.2	The lack of consultation with this parish has led to Rampion choosing the substation site based on the 'path of least resistance' instead of genuinely seeking to find the most suitable and least damaging and disruptive site, or to reasonably assess and compare the alternative locations. As a result, I believe, it has actually chosen the substation site which is the most damaging to the very environment and ecology we are trying to protect by our switch to green energy. There have been many instances where they have downplayed the impact of the proposals, for instance on • the wildlife at Oakendene and the northern cable route; • the traffic on the A272; • the side roads; and • the AQMA in Cowfold.		The Applicant notes the issues raised in this relevant representation. Terrestrial ecology and nature conservation matters raised within this Relevant Representation have been covered in **Table 6.2 'Environment and disturbance',** with further information provided in the **Table 6.3 'Ecology'** below. For traffic related points please refer to the response provided to **LI17.1** above. As part of the DCO process a thorough assessment of the likely impact of traffic upon the local road network and highway assets during the construction phase of works has been completed. Traffic volumes on the A272 and side roads have been observed and presented in the **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**. Further information has been provided in **Table MPB2 'Environment and disturbance' (Document Reference 8.24),** with further information provided in the **Table MPB1 'Traffic' (Document Reference 8.24).** The proposed routing strategy is further detailed in the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]**. The CTMP would be secured by Requirement 5 of the **Draft Development Consent Order (DCO) [PEPD-009]**. Air quality matters raised within this Relevant Representation have been covered in **Table 6.2 'Environment and disturbance'** with further information provided in the **Table 6.10 'Pollution'** below.
LI22.3	All of these are major concerns for residents, in the immediate vicinity and also in the wider village community. The unnecessary, unmitigable destruction of veteran trees and additional hedges, many classed as Important, by the choice of this site, the destruction of nightingale and reptile breeding grounds between the A281 and Oakendene and the disruption of wildlife corridors in the area should be worrying to all. The potentially severe negative economic impact of delays on the A272 will damage or destroy the Oakendene industrial estate, a major local source of employment and may also affect the economy of the wider county		The Applicant notes the issues raised in this relevant representation. Terrestrial ecology and nature conservation matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'** (below), with further information provided in **Table 6.3 'Ecology'** (below).
LI22.4	The visual impact of the substation, both from the A272 but also the AONB just a few hundred yards away have been significantly downplayed. Rampion's photomontage of this has been misleading, being taken from the east, not directly from the north, nor taking into account the number of mature trees and hedgerows which will need to be removed to create the access road. The AONB viewpoint assessments also downplay the true impacts. The poor reinstatement record of Rampion 1 is also very concerning.		The Applicant notes the issues raised in this relevant representation. Landscape and visual impact matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'** (below). The landscape and visual effects of the Oakendene substation are assessed in **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**. A photomontage from the A272 is provided in **Figure 18.11a-e, Volume 3** of the ES **[APP-099]** and was positioned at the corner of Kent Street and the A272 for safety reasons as there is no footpath on the A272. This viewpoint illustrates significant visual effects during the construction period. Effects on views from the A272 and the loss of mature trees and hedges are noted in the assessment as significant during the construction period. Significant visual effects will continue to affect some views from the A272 during the early years of operation whilst landscape planting, including advance planting and hedgerow management matures, as illustrated in the Indicative

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			Landscape Plan (Figure 1 of the **Outline Landscape and Ecology Management Plan [APP-232]**). Design principles included within the **Design and Access Statement (DAS) [AS-003]** include a 'curved' access road that will prevent direct views into the onshore substation.
LI22.5	• Road safety: At a personal level, and speaking also for others along the A272 nearby, we are very worried about safety and access to our homes during the years of construction work. The A272 is extremely dangerous from the industrial estate to the east of Kent Street with poor visibility from and to side roads, and a dip in the road which no amount of visibility splay will help to improve. There will be complex movements of HGVs in and out of the two Oakendene sites and Kent Street, adding to the dangers. I do not believe that Rampion have properly understood the way traffic flows at this point and have identified 'no need for a detailed junction assessment'(Doc ref 6.2.23). The access to Wineham Lane is not affected in the same way where it comes off the A272 being farther away from the mini roundabouts. Nobody raised traffic on the A272 as an issue in the Rampion 1 Relevant Representations. Indeed, they highlighted the fact that Wineham Lane had been built to take the Substation construction traffic.		As part of the DCO process a thorough assessment of the likely impact of traffic upon the local road network and highway assets during the construction phase of works has been completed. Traffic volumes and accident analysis on the A272 have been observed and presented in **Chapter 23: Transport, Volume 2** of the **ES [APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES (**Document reference: 6.2.32**) submitted at Examination Deadline 1. Accident data for a five year period from 1st January 2017 to 31st December 2021 has been assessed within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES (**Document reference: 6.2.32**) for all highway links where sensitive receptors were identified and within the vicinity of all temporary and permanent access junctions. This identified that the A272 between the A281 and A23 has a higher accident rate than the national average for rural A-roads. To ensure safe access is achieved to / from Oakendene substation the access junction will be design in accordance with Design Manual for Roads and Bridges visibility splay requirements and subject to an independent Road Safety Audit. It is also the intention of the Applicant to reach agreement with West Sussex County Council on the design of the proposed access during before the end of the examination period. The Applicant is currently reviewing options for the implementation of traffic management along Kent Street and accesses A-61 and A-64 to provide safe access for construction and general traffic. The outcomes of this review will be discussed with West Sussex County Council at the earliest opportunity with the aim of reaching an agreement in principle to the traffic management strategy. This would then be secured through a detailed CTMP for the stage of the authorised development comprising Kent Street which will be required to be submitted and approved by the highways authority before commencement within that stage in accordance with requirement 24(1)(a) of the **Draft Development Consent Order (DCO) [PEPD-009]**. Further information has been responded to by the Applicant in **Table 6.2 'Environment and disturbance'**, with further information provided in the **Table 6.1 'Traffic'** (below). The proposed routing strategy is further detailed in the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]**. The CTMP would be secured by Requirement 24 of the **Draft DCO [PEPD-009]**.

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LI22.6	• The core working hours are far too long, and then there is an additional one hour either side to allow return of HGVs, and the potential to extent the hours due to 'highway delays'.		The Applicant acknowledges this request for a change in working hours and has updated the **Commitments Register** **[APP-254]** (C-22) at Examination Deadline 1 to include the use of shoulder hours. This will also be updated and secured in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** at the next submission of this document.
LI22.7	• Kent Street: Rampion seem to have discounted the Wineham Lane route and site, partly on the grounds of Wineham Lane being a single-track road, but seem happy to use the most unsuitable, considerably smaller Kent Street for both construction and operational access and have not properly understood the impact of standing traffic or the effect on the AQMA. This is despite highlighting Kent Street in the early parts of the consultation as 'unsuitable for HGVs'. This is a much larger project than Rampion 1, yet no holding bay to manage the flow of HGVs has been considered, even though it was considered necessary for Rampion 1. There is a high voltage cable supplying much of the Horsham area which runs under the site. What will happen if UKPN need urgent access? Has UKPN been consulted about the construction of the proposed access road?		The reference to Wineham Lane being a single-track road was an error which has been corrected in the latest version of the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]**. Use of traffic management may be required to facilitate use of Kent Street by construction traffic, such as temporary traffic signals, manned stop / go boards, road widening or temporary speed restrictions. All temporary construction traffic management plans will need to be approved by West Sussex County Council. The **Outline CTMP** **[PEPD-035a]** contains details of required construction traffic routing for the Proposed Development. Where possible HGV traffic will be routed via the A23 and from the east along the A272 avoiding Cowfold. as detailed paragraph 1.2.5 of the **Outline CTMP** **[PEPD-035a]**, Commitment C-157 and C-158 **Commitment Register** **[APP-254]**. Impacts from road traffic emissions at sensitive receptor locations within Cowfold, and Cowfold AQMA specifically, have been assessed and are reported within the **Chapter 19: Air quality, Volume 2 of the ES** **[APP-060]**. The air dispersion traffic modelling used traffic data based on annual peak daily traffic, rather the annual average daily traffic stipulated in the Defra guidance. Therefore, the completed assessment was highly conservative. Impacts from emissions of NO_2, PM_{10} and $PM_{2.5}$ were considered. The assessment concluded that the impact from construction traffic emissions is negligible at all sensitive receptor locations, including residential receptors within the AQMA. The Applicant has provided further information on the decision to discount the Wineham Lane North site for the onshore substation (see Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing** 1 (**Document reference 8.25**) (submitted at Examination Deadline 1). Route alternatives and sifting matters provided within this Relevant Representations have been responded to by the Applicant in **Table 6.4 'Route / Alternatives'** (below). The Applicant notes the issues raised in this relevant representation. Air quality matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'** (below).

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			The Applicant is in discussions with UKPN. The protection of existing UKPN infrastructure will be ensured through DCO Protective Provisions.
LI22.8	Alternatives: I do not believe Rampion have adequately considered the alternative substation sites, as they are obliged to do, because it is now clear from the DCO documents that much of the environmental assessment supposedly taken into account in the decision-making process, was only done after the decision was made. They have also played down the impact on Oakendene Manor, businesses in Cowfold, and the public rights of way and ecology. Indeed, they do not seem to have recognised until after submission that a PRoW actually runs right through the substation site. There will be a brutal impact on the Grade 2 listed Oakendene Manor and ecology (both effects far worse than at the Wineham Lane sites), and on the landscape and public rights of way.		The Applicant notes the issues raised in this relevant representation. Matters relating to the decision making around the alternatives at the Oakendene Substation have been responded to by the Applicant in **Table 6.20 'Design and siting of the onshore substation at Oakendene'** (below) and further information is available in Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (**Document reference 8.25**) submitted at Examination Deadline 1. The assessment of effects on Oakendene Manor is provided in **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**. The assessment was undertaken in accordance with relevant guidance, and the methodology described in Section 25.8 2 in **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**. The assessment was supported by baseline information on the Oakendene historic parkland and the topography of the onshore substation site (see **Appendix 25.5: Oakendene parkland historic landscape assessment, Volume 4** of the ES **[APP-211]**). The assessment takes account of the design principles identified to reduce and minimise the impact on the setting of Oakendene Manor, which are secured in the **Design and Access Statement (DAS) [AS-003]**. A not significant effect was assessed on Oakendene Manor during the construction phase of the onshore substation and cable corridor. A significant effect was assessed for the operational and maintenance phase of the onshore substation, resulting in less than substantial harm, as concluded in Section 5 of the **Planning Statement [APP-036]**. Environmental matters provided within this Relevant Representation, including Socio economic impacts, have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'** (below), with further information provided in **Table 6.17 'Impacts on businesses and the local economy'** (below). Matters provided within this Relevant Representation regarding impacts to public rights of way have been responded to by the Applicant in **Table 6.26 'Impacts on Public Rights of Way'** (below). As presented in the **Access, Rights of Way and Street Plans [APP-012]**, PRoW 1786 runs through the Red Line Boundary of the Oakendene Substation, within Works No. 17 on the **Onshore Works Plans [PEPD-005]**, but is unaffected by the substation works and remains open. The section of PRoW 1786 that runs through the Oakendene West Temporary Construction Compound is temporary closed and diverted.
LI22.9	Property depreciation: Many of the owners of property in the immediate vicinity of the substation at Oakendene are elderly and realistically most of the homes will need to be put on the market before completion of the project. This will have a severe impact on their value.		In the event that land depreciates in value due to either the construction of the project or its operation, the landowner may be entitled to compensation from the Applicant. Such claims for diminution in value of a land interest due to construction works or the operation of the project, are known as Injurious Affection and Part 1 Claims

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			respectively. Any claims received would be assessed under the relevant provisions of the Compulsory Purchase Compensation Code. Such compensation would be accessible to all, and therefore would not have any disproportionate or differential impact on any protected characteristic group (e.g. age: the elderly).
LI22.10	It will also have health and social care impacts should it prevent them from moving to residential care in the latter part of their lives. Many people in the village of Cowfold are also worried about the value of their homes as the traffic issues will adversely affect this		Please see Applicant's response in reference **LI22.9** (above) regarding the matters raised regarding health impacts. The Applicant notes the issues raised in this relevant representation. Population and human health matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.7 'Health and Wellbeing'** (below). Further information is provided within the **Appendix 28.3 Equalities Impact Assessment, Volume 4** of the Environmental Statement (ES) **[APP-221]**. As part of the DCO process a thorough assessment of the likely impact of traffic upon the local road network and highway assets during the construction phase of works has been completed and presented in **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**. Further information has been provided by the Applicant in **Table 6.2 'Environment and disturbance'** (below), with further information provided in the **Table 6.1 'Traffic'** (below).
LI22.11	Not enough time to allow adequate assessment: It is clear that there is a lack of attention to detail in the DCO submission documents, where there are many examples of inaccuracies and omissions, even looking only at the information related to the onshore substation area. I have highlighted a number of them to WSCC and Horsham DC, such as the lack of clarity about exactly where vehicles will travel on Kent Street, definition of LGVs and the extent of traffic through Cowfold. What at first sight appears to be a smart presentation, actually contains many instances of very poor-quality data. The evidence presented clearly cannot be taken at face value and requires careful scrutiny. Add to this Rampion's determination not to share EIA information, beyond what was available in the PEIR reports, before submission. WSCC and Horsham DC have already expressed their frustration about this. And on 3rd October I received the following from SWT:" We are currently working our way through the documentation presented for the entirety of the 38.8km onshore cable route, plus the proposed new onshore substation and all marine elements. Given the sheer scope of the proposal, and the team's involvement in the concurrent Gatwick DCO process, it will not be possible for us to make detailed comment on every aspect of Rampion 2 within the required timescale." And from Sussex Ornithological Society:" I am afraid that, following the sad passing earlier this year of our Conservation Officer, Richard Cowser, the society has had to somewhat reduce its engagement in planning work as he has proved to be irreplaceable. Our Officers have decided that we will not be able to engage directly in the Rampion DCO process by registering as an interested party ourselves. However, we will be supporting Sussex Wildlife Trust in their work on the		As part of the DCO process, a thorough assessment of the likely impact of traffic upon the local road network and highway assets during the construction phase of works has been completed. An assessment of traffic volumes on Kent Street have been presented in **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES (**Document reference: 6.2.32**). Further information has been provided by the Applicant in **Table 6.2 'Environment and disturbance'** (below), with further information provided in the **Table 6.1 'Traffic'** (below). The proposed routing strategy is further detailed in the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]**. The CTMP would be secured by Requirement 5 of the **Draft Development Consent Order (DCO) [PEPD-009]**. Terrestrial ecology and nature conservation matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'** with further information provided in the **Table 6.3 'Ecology'** (below).

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	project, and we are more than happy to help groups such as yourselves in any way we can." In addition, the NPS is currently under revision and we find ourselves preparing our relevant representations referring to the old NPS, yet it may be examined under the new one, or the Secretary of State can override it under the new one. This can only lead to confusion and the potential arguments for legal challenge at a later date. Under the Planning Act 2008, section 108 allows for suspension in these circumstances.		

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Table LI23 Applicant's Response to Nigel Allen Light [RR-273]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI23.1	Our concern involves the use of Greentrees Lane (which is a bridleway) for the access point to work-sites. 1) Most concerning to us (and doubtless to all users of both the A281 and Greentree Lane bridleway is the proposed use of the bridleway entrance off the A281 into Greentree Lane itself. For your information, this road has a 60mph speed limit and the entrance to Greentree Lane bridleway (from either direction) is blind. Furthermore, visibility exiting the bridleway is also partially sighted. In summary – large construction vehicles on roads with a 60mph speed limit turning into and exiting a single lane narrow track/bridleway is fraught with RTA risk! Rampion proposal to access the 'Right of Way' at this location suggests that RTA safety has not been considered or addressed. 2) In addition - given Greentress Lane is a bridleway used by horse-riders and dog walkers in particular, we simply cannot reconcile the danger that heavy construction vehicles brings; we would welcome you comments as to the gravity of our concern respects danger to human and animal life here. 3) In considering this, please would Rampion advise as to the actual planned usage* of this access point. By this we mean is it intended to be used only for vehicular access to the immediate field and construction work therein? *at a meeting with Lucy Tebbutt of Rampion, she intimated Lucy intimated the fact that there would be portaloos (which would need to be changed regularly) cabin for staff working on site). Diesel containers for vehicles etc. Furthermore we trust there is no intention of this dangerous access point being used any more broadly by construction vehicles as a general work-site/parking site or materials storage site for other local construction.	022	Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 30 of the **Onshore Works Plans [PEPD-005]**. **1 - Greentrees Lane Traffic Considerations** As part of the DCO process a thorough assessment of the likely impact of traffic upon the local road network and highway assets during the construction phase of works has been completed. Traffic volumes on A281 have been observed and presented in **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**. Further information has been provided in **Table 6.2 'Environment and disturbance',** with further information provided in the **Table 6.1 'Traffic'**. The proposed routing and access strategy is detailed in the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]**. The CTMP would be secured by Requirement 24 of the **draft Development Consent Order (DCO) [PEPD-009]**. Greentrees Lane provides access to construction access A-56 and will be used to access the onshore cable route. Noting the extent of the Order Limits, Greentrees Lane would only be used for construction traffic for approximately 50m before accessing the field and haul road. As detailed within the Outline CTMP all temporary construction accesses will be designed to follow design standards contained within the Design Manual for Roads and Bridges and to meet relevant West Sussex County Council requirements. This includes provision of suitable visibility splays, which will be achieved through coppicing. Detailed design of these accesses will form part of stage specific CTMP secured pursuant to requirement 24(1)(a) of the **Draft DCO [PEPD-009]**. **2: Impact on Bridleway** The Applicant notes the issues raised in this relevant representation. The matters provided within this Relevant Representation regarding impacts to public rights of way have been responded to by the Applicant in **Table 6.26 'Impacts on Public Rights of Way'** below. Construction traffic will be required to give-way to Public Right of Way users where it is safe to do so. **3: Use of Access Point/ Land to the West of the A281** The Land Interest owns a residential property, pasture land and a private equestrian complex located to the west of the A281, which is accessed via a driveway leading east-west from the A281.

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			The dwelling and the equestrian complex are located to the west and north-west of the cable installation works. The pasture land (currently used for grazing and equestrian purposes) is affected by the proposed Rampion 2 cable route (Works No.9 – Cable Installation Works (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive covenant are sought. The pasture land affected by Works No.9 comprises Plot 30/4 as shown in blue on the **Land Plans Onshore [PEPD-003]**. The entrance to the driveway to the Land Interest's residential property and equestrian complex (being located to the north of Plot 30/4), is also affected by Works No.9 (Cable Installation Works (including construction and operational access)). Therefore, the driveway entrance is included within the Order Limits for both permanent and temporary rights. A Trenchless crossing is proposed underneath the A281 and there is likely to be a required trenchless crossing compound on the Land Interest's land. This compound is required to accommodate a range of equipment. An indicative compound arrangement, list of equipment and likely indicative programme for HDD was sent to Mr and Mrs Light on 21 December 2023 as well as Letter detailing HDD construction methodology sent on 05 December 2023. The Applicant will seek to engage further with the Land Interest regarding detailed construction access design and accommodation works in accordance with the **Outline Code of Construction Practice [PEPD-033]** regarding Private Means of Access (PMA) in Section 5.7.10. Any trenchless crossing compound will only be used for Rampion 2 works. **Maintenance of Access** Plans for private means of access during construction are described in Paragraph 5.7.10 of **the Outline Code of Construction Practice (CoCP) [PEPD-033]**. The following general principles will apply to the managed or private means of access during the cable route construction: • Any access restrictions or effect on individual properties will be kept to a minimum and the Applicant will work with local stakeholders to develop individual solutions to keep disruptions as low as is reasonably possible; • All crossings of private means of access will be developed to allow emergency access at all times; • Contractors will be required to accommodate reasonable requests for access during the working • A nominated point of contact on behalf of the Applicant will be communicated to all residents and businesses at least three months before the start of construction.

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			A final Code of Construction Practice will be required to be submitted and approved on a staged basis, in accordance with the **Outline CoCP** **[PEPD-033]**, pursuant to requirement 22 of the **Draft Development Consent Order** **[PEPD-009]**.

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Table LI24 Applicant's Response to Alan David Lewhellin Griffiths and Janice Elizabeth Griffiths [RR-003]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI24.1	The owners have engaged fully with RWE in the consultation process since they were first approached in 2020, including a formal consultation response to RWE on 28th November 2022, together with their earlier formal representations of 29th September 2021. However, despite this and clearly stating their various concerns, they do not believe that these have been sufficiently addressed, and thus they are left with no choice but to OBJECT to the scheme as currently designed. Full details of their concerns can be provided in due course and include:- • No response ever having been received to their formal response of November 2022 • No change to submitted plans of cable route and working area to take account of any of their concerns • Severe impact on their dairy farming enterprise due to working strip passing through the middle of the farm, taking a significant area out of production and cutting the farm in two • Lack of availability of alternative forage in the area which could be bought in to compensate for this loss of production • Resultant need to reduce dairy cow numbers • Damage to farm track from use by heavy construction machinery which is unlikely to be addressed for the duration of construction • Impact on diversified farming businesses of the works, given proximity of working area to -holiday let cottage -shepherd's hut holiday let -camping site • Lack of proper consideration of alternative routes through the farm by RWE to address these issues	024	**Context** Details of the proposals on the Land Interest's land holding are shown on Sheet 27 of the **Onshore Works Plans** **[PEPD-005]**. The Land Interest owns and operates a dairy farm with pasture land (currently used for grazing) affected by the proposed Rampion 2 cable route (Works No.9 – Cable installation works (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. The pasture land affected by Works No.9 includes Plot 27/16 as shown coloured blue in **Land Plans Onshore** **[PEPD-003]**. There are two areas of pasture land located either side of the Works No.9 and an existing track which are within the Order Limits as a proposed construction and operational access (Works No.14), for which Construction and Operational access rights are sought. These areas include Plots 27/20, 27/17 as shown coloured blue in the **Land Plans Onshore** **[PEPD-003]**. In addition, the driveway/ farm track which provides access to the farmland from Bines Green, as well as providing access to the Land Interest's residential property, and associated holiday lets/ camping site use, is affected by a proposed Rampion 2 construction and operational access (Works No.14). The areas affected by Works No.14 include Plots 27/18, 27/19 and 27/22 as shown coloured blue in the **Land Plans Onshore** **[PEPD-003]**. **Response to Formal Representation of November 2022** The Applicant received a formal consultation response from the Land Interest's agent on 28 November 2022. Contact was made via email with the Land Interest's agent responding to some of the queries raised, in March 2023 and June 2023. The Applicant sent a formal response to the consultation response, (as well as subsequent queries raised by the Merrion Farm personal consultation response dated 26 November 2022 and an email dated 26 April 2023), via a Letter dated 20 September 2023. **Consideration of Alternatives** The Applicant has been in regular correspondence with the Land Interest and their agent since March 2021. The Applicant met with the Land Interest on site in August 2021 and at a Landowner Surgery in September 2021. When on site, the Land Interest expressed concerns about general disruption to the dairy farm business and the proximity of the proposed cable route to their proposed slurry pit which had planning consent and was due to commence construction in 2022. The crossing of a Southern Gas Networks pipeline

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			was also identified as an engineering technical constraint for the PEIR cable route proposal due to the angle of the crossing required at this location. The proposed cable route was subsequently amended to avoid the slurry pit and to enable an acceptable cable crossing arrangement for the pipeline; taking a route to the west of the farm instead. The amended route was presented to the Land Interest at a site meeting in March 2022 and consulted upon in October 2022 at the second Statutory Consultation. The amended route was referred to as Alternative Cable Route 7 in the second Statutory Consultation. It included two trenchless crossings, one to avoid impacts on a farm access track and mature treeline and another to cross under the River Adur before rejoining the original cable route. The Land Interest responded to the October 2022 Consultation and the Applicant issued a Letter response dated 20 September 2023. This Letter is appended in **Appendix 16 Letter to Mr & Mrs Griffiths 20.09.23**. The amended route was subsequently incorporated into the cable routing design in this location. The Applicant is not aware of any further alternative routes that have been put forward by the Land Interest, other than a request in their consultation response to the second Statutory Consultation dated 28 November 2022 to revert to the PEIR / cable route first consulted upon in the first Statutory Consultation. As set out above, the PEIR cable route proposal is not feasible due to engineering technical reasons.. The Applicant has provided a general summary of cable route alternatives and sifting matters which may be a useful reference in **Table 6.4 'Route / Alternatives'**. **Voluntary Agreement** The Applicant provided Heads of Terms to the Land Interest and their agent on 15 March 2023, and the land agent confirmed their client wanted to progress with discussions on Heads of Terms on 8 November 2023. The Applicant is continuing to negotiate with a view to acquire the rights required for the development by voluntary agreement. The Applicant is in discussion with the Land Interest's agent to negotiate permanent rights for an easement to lay a cable within the proposed Order Limits. The easement will be finalised taking no greater area than required. Permanent rights are sought for the cable easement. Temporary rights are required for construction access. The Applicant confirms it will engage further with the Land Interest regarding the refinement of the final land area and appropriate and reasonable mitigation measures during construction for the project to minimise disturbance to the Land Interest. **Impact on Dairy Farm Business** The Applicant set out its position with respect to recognising and compensating for business losses and disturbance specifically with reference to the dairy business, during construction in a Letter dated 20 September 2023 (see **Appendix 16 Letter to**

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			Mr & Mrs Griffiths 20.09.23). The Applicant remains keen to explore reasonable options to mitigate the effect of temporary severance of land, particularly as this relates to the operation of the dairy farm business, as more detailed construction methodology and timescales are known. In this location, the temporary cable installation area (Works No. 9 and Works No.14) runs through the western section of the pasture land. The Land Interest has approximately 15 fields, and the works areas impacts 6 of them. The Applicant will continue to engage further to understand the Land Interest's specific requirements to accommodate the haylage/ farm management operations and minimise disturbance wherever possible. This could include crossing points to be agreed with the Land Interest across cable installation area (Works No.9) and the construction and operational access area (Works No.14) to ensure parts of the field will remain available for use. Detailed cable routeing will be refined further to pre-construction surveys. The track that leads into the farm is crossed by the Works No.9, but this is proposed to be a trenchless crossing location in order to minimise disturbance to the operation of the dairy business. As the project progresses to the point of entry being taken for construction, the Applicant is keen to have ongoing discussions with the Land Interest to understand how best to implement temporary accommodation works during the construction period (e.g. fences, gates and crossing points). Also the Applicant will continue to engage to further understand the Land Interest's specific requirements to accommodate the tenants farming and business operations and minimise disturbance wherever possible. **Accommodation Works** The Applicant will seek to engage further with the Land Interest and their tenants regarding detailed construction access design and accommodation works in accordance with **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**. **Fencing** - The Applicant confirms that the construction area within the Order Limits will be fenced off for the duration of construction. **Crossing/ Access Points** - Accommodation works (to include access points over the construction area) to seek to mitigate the impact will be discussed with the Land Interest in due course. **Compensation** The Applicant will discuss in more detail Accommodation Works with the Land Interest to ensure access is facilitated to any severed land. Where severed land cannot be farmed the Applicant would be willing to negotiate an appropriate compensation claim for disturbance.

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			If Compulsory Purchase Powers are used, affected Land Interests will be compensated in accordance with the provisions of the Compensation Code. Claims for disturbance and crop loss will be considered where reasonable, substantiated and shown to be caused as a direct consequence of the temporary use of the land and the works in accordance with the relevant legislation. Once the cable has been constructed and the land reinstated, the land can be returned to normal use. **Farm track** Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 27 of the **Onshore Works Plans [PEPD-005]**. The existing track which leads to the farm and a number of residential dwellings is defined as 'Works No.14 – Construction and operational access'. A photographic Record of Condition will be undertaken in order to assess the condition prior to any works. Reinstatement commitments are contained with **the Outline Construction Method Statement [APP-255]** and **Outline Soils Management Plan [APP-226]**. The **Outline Construction Traffic Management Plan (CTMP) [PEPD-035]** identifies the existing track as Access A49 and states that the Proposed Project will use it for "light construction and operational" vehicles. 4.6.1 states that "*where less intensive site work related to the proposed infrastructure is being undertaken as part of the onshore elements of the Proposed Development, light temporary construction access designs will be implemented*". 4.7.1 states that Light temporary construction accesses with a requirement for future operational use will be designed to the same standards as light temporary construction accesses. **Holiday Lets and Campsite** The holiday let and campsite do not fall within the Order Limits, however, are in close proximity, being located beside the main track leading into the farm, and within woodland to the east of Works No.9. The Applicant set out its position with respect to recognising and compensating for losses and disturbance specifically with reference to the holiday lets and campsites during construction in a Letter dated 20 September 2023 (see **Appendix 16 Letter to Mr & Mrs Griffiths 20.09.23**).

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Table LI25: Applicants Response to Angela Lightburn [RR-021]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI25.1	Reference: Draft Development Consent Order (DCO) EN010117 [REDACTED] It has come to my attention via a notice attached to a sign post at the end of Kings Lane that Rampion are proposing the "Acquisition of Rights by the Creation of New Rights or the imposition of Restrictive Covenants over approximately 11 square metres of land being private road and verge (Kings Lane)" I wish to object on the following grounds: 1. This threatens my rights of access to my property because [REDACTED], where I live, is the only means of access that I have to the public highway. 2. I have had access without challenge for 30 years. 3. There has been no direct consultation with me on this issue. 4. There is no explanation of why this measure is required. 5. It effectively creates a ransom strip. 6. There appears to be no reason why Rampion would want to acquire this tiny piece of land other than malicious intent. 7. The Rampion project wants to cut across Kings Lane in two separate places, but several access points for construction traffic have been identified from off Kent Street and therefore access via Kings Lane is unnecessary. 8. This has caused me unnecessary distress and affected my mental well being. 9. The measure proposed is in direct contravention to my human rights. Rampion is a hugely disruptive project involving thousands of people but they would find it a lot less hassle if they engaged directly with those affected, and got them on board, rather than trample all over us with a lack of consultation and legal threats.	025	**Kings Lane and Moatfield Lane (Points 4, 5, 6 & 7)** Details of the operational access as it passes through this location are shown on Sheet 32 of the **Onshore Works Plans [PEPD-005]**. The Land Interest has private rights of access over Kings Lane/ Moatfield Lane, (Plots 32/2, 32/3, 32/4, 32/5, 32/6, 32/11, 32/12/, 32/13 and 32/15) shown coloured blue on the **Land Plans Onshore [PEPD-003]**, which provides access to their residential property. **Operational Access** Kings Lane/ Moatfield Lane is within the Order Limits for an operational access (Works No. 15). The Applicant seeks new rights (i.e. operational access rights) over Kings Lane/ Moatfield Lane, for this purpose, but does not propose to acquire the land. The rights sought by the Applicant will be exercised in common with existing private rights of access and will be entirely consistent with the existing use of the land as an access road. No ransom strip is created as the Applicant will not own the road and is not intending to purchase Plot 32/13. Operational Access Rights are defined in Schedule 7 of the **Draft Development Consent Order [PEPD-009]** and in summary comprise rights of access with or without vehicles and equipment: *for the purposes of operation, maintenance and decommissioning of the authorised development*". The rights are expanded on further in Schedule 7. Operational access (for light personnel or 4x4 vehicles) will be required throughout the project's lifetime, for inspections and maintenance of the cable route. It is anticipated that the Applicant would need to access the lane by either walking or driving, to carry out occasional maintenance responsibilities. **Cable Installation Works** In addition, Kings Lane/ Moatfield Lane is crossed twice (Plot 32/11 and Plot 32/3) by the proposed cable route (Works No. 9 – Cable installation works (including construction haul road and operational access)), which will involve open-cut trenching installation methodology, and therefore the Cable package of rights and restrictive covenants are sought, as identified in Schedule 7 to the **Draft Development Consent Order [PEPD-009]**. Please see comments regarding maintenance of access below. **Plot 32/13 (Unregistered Land)** The small strip of land (Plot Number 32/13) at the end of Kings Lane, over which the Land Interest has private rights of access, is unregistered. Kings Lane itself (to the west of Plot 32/13) is a privately owned road. To the east of Plot 32/13 lies Plot 32/14, which is also unregistered, but falls within the adopted highway extent as verified by data provided by West Sussex County Council.

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			The adopted highway then extends onto Kent Street to the east. The freehold ownership of Plots 32/13 and 32/14 is unknown (they are both unregistered on the Land Registry). As Plot 32/13 is unregistered and unadopted, the Applicant followed a process in accordance with its land referencing methodology (as per the Land Referencing Methodology within the **Statement of Reasons** **[PEPD-012]** to seek to ascertain who owns the land. The Applicant placed a notice on site on 6 April 2023 and maintained this weekly for six weeks requesting for someone to come forward if they believed they owned the land. No responses were received. The Applicant subsequently placed a notice pursuant to Section 56 of the Planning Act 2008 on site between September and November 2023, which the Land Interest refers to having seen. This notice is in accordance with Regulation 8 of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) and Regulation 16 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended), the purpose of which is to provide notice of the acceptance of the application of the Development Consent Order for examination by the Planning Inspectorate. **Consultation (Points 2, 3 & 9)** Kings Lane/ Moatfield Lane was included within the draft Order Limits that was consulted upon in the Highways Consultation in April 2023. Consultation packs were provided at that time to Kings Lane/ Moatfield Lane residents (including to the Land Interest) as it was assumed that those dwellings have rights of access across Kings Lane in order to access their land and property. Whilst the Book of Reference notes the Land Interest as having rights over Plots 32/2, 32/3, 32/4, 32/5, 32/11 and 32/15, the Land Interests were omitted from Plots 32/6, 32/12 and 32/13 along Kings Lane/ Moatfield Lane within the **Book of Reference** **[APP-026]** in error. Title documents have since been reviewed and the Book of Reference has since been updated it to include Angela and Paul Lightburn as having rights of access over Plots 32/6, 32/12 and 32/13. The updated Book of Reference will be available at the next requested deadline by PINs (Deadline 6). However, these changes will be captured in the revision of the **4.4 Compulsory Acquisition - Land Rights Tracker** and accompanying change log at Deadline 2. **Chapter 6** of the **Consultation Report** **[APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. **1: Maintenance of Access** The Private Means of Access (PMA) along Kings Lane/ Moatfield Lane will be temporarily suspended during the open-cut trenching of the lanes in Plot 32/11 and 32/3. The powers within the Order will allow such rights to be suspended whilst RED is in temporary possession of the land for construction purposes.

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			Mindful of residents' concerns, the Applicant updated the **Outline Code of Construction Practice [PEPD-033]** at the pre-examination deadline. • Additional detail has been provided in **paragraph 5.7.10** of the **Outline Code of Construction Practice [PEPD-033]**, to explain how general principles will apply to management of PMA during the cable route construction: • All crossings of PMA will be developed to allow emergency access at all times (through the provision of road plating); • Contractors will be required to accommodate reasonable requests for access during the working day by temporary plating of trench unless a suitable diversion if provided around the works; • The trench will be plated or temporarily backfilled outside of construction working hours where feasible to restore access, unless a suitable diversion is provided around the works; • Any access restrictions or closures will be communicated to all residents and businesses with affected rights of access (as recorded in the **Book of Reference [APP-026]** or successor document); and • A nominated point of contact on behalf of the Applicant will be communicated to all residents and businesses at least three months before the start of construction who can be contacted in case of any concerns of grievances Matters relating to construction practices and project commitments are raised within this Relevant Representation have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'**. **Bridleway** The DCO seeks to temporarily close the bridleway 1730 across the cable corridor for which a diversion will be in place between points 50a and 50b. As mentioned above, the private road access will not be diverted. The Applicant is mindful there may be some temporary disruption during construction. However, during the operational phase, access rights along the lane will be unaffected, and the Applicant's rights will be exercised in common with other private rights. The rights sought are necessary for the proposed development, are for a legitimate purpose and are no more than is reasonably required for the construction, operation, maintenance and protection of the project. Impacts on private rights will be kept to a minimum during the

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			construction period and will be unaffected during the operational phase of the project. As explained in Section 13 of the **Statement of Reasons** **[PEPD-012]** any infringement with human rights is proportionate and legitimate and in accordance with the law, and is outweighed by the significant public benefits that will be delivered.

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Table LI26 Applicant's Response to Brookside Holiday Camp Limited [RR-050]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI26.1	Proximity of part of the scheme to our business; noise; security; enjoyment of our location for our customers; length of project and putting good the vicinity after the scheme has completed; wildlife migration due to work.	026	The Land Interest owns the subsoil to a part width of adopted highway (roadside verge) that is proposed to be used for a temporary construction access (Plot 4/11), works no. 13 (temporary construction access). Details of the temporary construction access that affects the access to the Land Interest's land holding are shown on Sheet 4 of the **Onshore Works Plans [PEPD-005].** The Applicant notes the issues raised in this relevant representation. All environmental matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'** and **Table 6.9 'Brookside Caravan Park'** (below).

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Table LI27 Applicants Response to Janine Creaye [RR-164]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI27.1	I strongly object to the Rampion 2 Windfarm Proposals. The final choice of substation site as Oakendene, is the worst possible option put forward for loss of biodiversity and cannot be offset with 'net gain'. This is currently an undisturbed section of the River Adur catchment area. It is a patchwork of small fields, flood meadows, dense lichen covered hedges, and mature oak trees. The damage will far outweigh the benefits of choosing this route, which is so unnecessary. The alternative substation site as an expansion to the existing Bolney substation would cause far less ecological damage as it does not involve this mosaic of unfarmed flood meadow round the Cowfold Stream and tributaries The justifications for choosing this option of substation site are inconsistent and no biodiversity data was released in advance of the DCO making it impossible for wildlife organisations and local people to assess evidence accurately. We saw surveys being undertaken just before the DCO submission so they could not possibly have been assessed against the alternatives. Most residents of Cowfold did not know that a substation was planned to be built at Oakendene until the last consultation October/November 2022. This was after the option had been chosen (July 2022). There has been no consultation that includes the choice of substation site. We have not been consulted when the impact on this area is so great. Local people including landowners have not been directly consulted on the biodiversity and people surveying have not been allowed to engage in dialogue with local people. Under threat and inadequately surveyed in the proposal are: 1) Nightingales Red List (22 territories recorded this year directly in the cable construction route) Total of 51 entries into the records. Other protected and declining bird species: skylarks, cuckoos, turtle doves, barn owls, tawny owls, house martins 2) Priority Habitat of Unimproved Lowland Meadows, particularly at Crateman's Farm. A rare habitat for many insects, mammals and birds. This is not acknowledged in Rampion 2 documents submitted but we have strong evidence to endorse this designation. 3) Ecology of Kent Street and Moatfield/Kings Lanes covering a toad migration, field edge plants (including orchids, wood anemones), glow worm breeding locations, all in the cable construction route. The tributary used for the toad migration is dug up by the cable trench. 4) A Green Lane dating over 150 years with a double row tree boundary, and a well-worn animal track between. This is bisected by cable construction, disconnecting the established wildlife corridor, with the loss of many mature trees and leaving a massive tree gap. 5) Badger territory is extensive in the cable route approaching Oakendene. An active sett is exactly in the middle of the cable route 6) Adders, grass snakes and slow-worms. They are all Uk Priority species in decline and construction vibration and disturbance will destroy a particular well-established population 7) A lake with bats, flying insects, water voles, otters and water birds next to the substation (this is the only option put forward which is next to a large lake 8) Extended route incurred by this substation option loses many more mature oaks, scrub and dense hedgerow than the alternative. 9) Flooding patterns and water quality are essential to the rich ecology here, but would be seriously impacted by construction Surveys of priority red list bird species, have been inadequately undertaken.	028	**Consultation** Chapter 6 of the **Consultation Report** **[APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. For further information please see **Appendix 15 Promotion of Rampion 2 Consultations in and around Cowfold 2021-2022**. **Context** Details of the onshore cable route as it passes through this location are shown on Sheet 32 of the **Onshore Works Plans** **[PEPD-005]**. The Land Interest owns a residential property which benefits from access rights over Kings Lane and Moatfield Lane (Plots 32/3, 32/4, 32/5, 32/6, 32/11, 32/12 and 32/13 as shown coloured blue on the **Land Plans Onshore** **[PEPD-003]** which leads to their residential property. Kings Lane and Moatfield Lane are included within the Order Limits as they are required for operational access (Works No.15). Therefore, Operational Access Rights are sought over Kings Lane and Moatfield Lane which are defined in Schedule 7 to the **Draft Development Consent Order (DCO)** **[PEPD-009]**. In addition, Kings Lane/ Moatfield Lane is crossed twice (Plot 32/11 and Plot 32/3) by the proposed cable route (Works No. 9 – Cable installation works (including construction haul road and operational access)), which will involve open-cut trenching installation methodology, and therefore the Cable package of rights and restrictive covenants are sought, as identified in Schedule 7 to the **Draft DCO** **[PEPD-009]**. **Transport:** As part of the DCO process a thorough assessment of the likely impact of traffic upon the local road network and highway assets during the construction phase of works has been completed. Traffic volumes have been observed and presented in the **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES (Document reference: 6.2.32). Further information has been provided in **Table 6.2 'Environment and disturbance'**, with further information provided in the **Table 6.1 'Traffic'.** In addition, **the Outline Public Rights of Way Management Plan** **[APP-230]** outlines the management measures, including temporary closures and diversions, for all Public Rights of Way and Open Access Land impacted by the Proposed Development. This document includes embedded environmental measures which will manage impacts on Public Rights of Way during the construction period.

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	Rampion has stated that 'Desk Study' is considered sufficient for the cable route, yet in such privately owned undisturbed land little recording has already been done to show up in this way. Breeding birds whether nesting at ground level (sky larks) in very dense hedging (nightingales) or in trees are all taken together as 'breeding birds' and considered a timing issue only, so appropriate habitat mitigation for their nesting sites is not put forward. Rampion have written that they do not survey for reptiles in the cable route regardless of UK BAP status or threat of extinction (adders). A materials depot and cable construction surround an established breeding site at Cratemans. We have added 7 grass snake and 8 slow-worm sightings to the records this year. Rampion say they do not survey for amphibian migration in the cable route as they are not destroying ponds, but they are cutting through the tributary which is access to the breeding pond and used in migration. They say that minimal hedge loss will mitigate against disruption, which is incorrect as toads use roads and streams in the migration. Rampion will not engage in any conversation about preserving the Green Lane wildlife corridor, or options of minimising the tree loss. 22 trees are in the area marked for removal. Some are mature oaks. Light pollution in the cable route is not being considered in how it impacts glow worm breeding, toad migration, badger feeding, and nightingale breeding - as they are not surveyed. Winter construction and trenchless crossing compounds would all add to the impact, especially if security lighting is used over-night. The flood patterns here are well established. The construction will interfere with this and inevitably people's properties and access routes will be affected by unexpected flood water, as they were in Rampion 1. Water courses were also polluted by fuel leakage in the construction process for Rampion 1. Rampion 2 has two trenchless crossing depots very close to the Cowfold Stream only in this substation option. The area is flooded through winter and randomly at other times of year including summer. Equipment is known to discharge fuel residue in the water and accidental leakage, as happened before, remains a possibility. This threatens to spread via flood water and as consequence would go on to pollute the River Adur. The psychological impact on local people is missed out in the proposals. The anticipation of noise, vibration, vehicle activity impeding access, where it is so quiet, and the industrialisation of such a rich biodiverse area has meant that the detrimental impact has already begun. Many people from Oakendene Industrial Estate, Cowfold and further across Sussex walk, ride and cycle in this area of the River Adur catchment. This is being greatly underplayed, when footpaths, bridlepaths and lane access will be compromised or shut over the years of construction. The Bolney North option had far less impact on this type of use. The very poor reinstatement of vegetation after rampion 1 is visible and well documented. As a consequence, we have no trust in any promise of reinstatement this time, nor the promise of biodiversity net gain. We have asked how things will be different this time, but have had no answer. As the UK has been found to be one of the 'world's most nature-depleted nations' how can we accept this much loss of undisturbed habitat for the sake of a wind farm which only lasts 25 years, especially when there are much less damaging alternatives? I believe that the irreplaceable habitats and biodiversity of this area need far more serious attention than has been given so far. I will be submitting evidence in the following stage of this process.		The proposed construction traffic routing strategy is further detailed in the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035]**. The CTMP would be secured by Requirement 5 of the **Draft Development Consent Order (DCO) [PEPD-009]**. Terrestrial ecology and nature conservation matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'**, with further information provided in the **Table 6.3 'Ecology'**.

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Table LI28 Applicants Response to Emily Thorpe [RR-115]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI28.1	Draft Development Control Order (DCO) EN010117 and the supplementary Notice of Acceptance of a DCO Plot Number 32/13. My husband and I object to the above DCO in our capacity as owners of third-party rights over the affected land. These rights exist to provide the sole and unfettered access to our home. Our right to use King's Lane is contained in title numbers WSX181848 and SX148008. King's Lane and Moatfield Lane are privately owned. Our house, [REDACTED] was built c.1901 and a right of access to the highway, Kent St Lane, has existed since then. The oldest house with identical rights was built in the 16th century and the lane's longest resident has enjoyed these rights continuously for over 30 years without challenge. The conditions for us and others to enjoy presumptive rights of access over the affected unregistered land are more than satisfied. Our objection is made on principal and is independent of any opinions we may have of the wider Rampion 2 project. As such it falls within Article 8 of the Human Rights Act 1998 and European Convention of Human Rights and all other domestic law. Other properties (see below) are also affected and you may see similar objections. Passage over the affected land is the only vehicular access for all properties referred to in this letter. There can be no compelling operational reason for [REDACTED] to be compulsory acquired or for our pre-existing rights of access and easements for utilities to be extinguished. The applicant's development proposals envisage trenching for cabling dissecting King's Lane and Moatfield Lane in two places. The applicant is not seeking ownership of the trench corridor to achieve this. Following the same reasoning, the applicant does not need ownership to secure rights of access to this unregistered strip at the mouth of King's Lane. The applicant is being inconsistent in its approach. The current ownership proposal is material overreach and unnecessary for the successful outcome of the applicant's project. This is a 'ransom strip,' the purpose of which is divorced from project delivery. The motivation for seeking such a dislocated right must be seen in this context. There is no overriding public interest. A high bar of public interest is required in this case. The applicant is not a statutory or public body. Its motivation is to maximise profit and return to shareholders. Having no clear operational purpose, the applicant's intention must be to secure some other tangential advantage not directly related to a successful outcome of its project. Moreover, the applicant's process is questionable. No mention of this additional DCO was referred to in direct homeowners letters sent to us by recorded delivery on 18 Sept and 25 Sept 2023. The only notice we had about it was by chance when a neighbour spotted a letter fixed to a gate post at the end of King's Lane. There has been no direct contact with any landowner or owner of any third-party rights to explain what is proposed. This 'last resort' measure is wholly ill conceived. Furthermore, the categorisation of King's Lane in the DCO as a 'bridleway and public footpath' is incorrect, misleading and a misrepresentation to the Planning Inspectorate and the Secretary of State. This is a privately owned road and subject to legacy rights granted to neighbouring properties; it is for the owners of	032	**Context** Details of the operational access as it passes through this location are shown on Sheet 32 of the **Onshore Works Plans [PEPD-005]**. The Land Interest has private rights of access over Kings Lane/ Moatfield Lane (Plots 32/2, 32/3, 32/4, 32/5, 32/6, 32/11, 32/12/, 32/13 and 32/15) as shown coloured blue on the **Land Plans Onshore [PEPD-003]**, which provides access to their residential property. **Operational Access** Kings Lane/ Moatfield Lane is within the Proposed DCO Order Limits for an operational access (Works No. 15). The Applicant seeks new rights (i.e. operational access rights) over Kings Lane/ Moatfield Lane, for this purpose, but does not propose to acquire the land. The rights sought by the Applicant will be exercised in common with existing private rights of access and will be entirely consistent with the existing use of the land as an access road. No ransom strip is created as the Applicant will not own the road and is not intending to purchase Plot 32/13. Operational Access Rights are defined in Schedule 7 of the **Draft Development Consent Order [PEPD-009]** and in summary comprise rights of access with or without vehicles and equipment: *for the purposes of operation, maintenance and decommissioning of the authorised development*". The rights are expanded on further in Schedule 7 of the **Draft Development Consent Order [PEPD-009]**. Operational access (for light personnel or 4x4 vehicles) will be required throughout the project's lifetime, for inspections and maintenance of the cable route. It is anticipated that the Applicant would need to access the lane by either walking or driving, to carry out occasional maintenance responsibilities. **Cable Installation Works** In addition, Kings Lane/ Moatfield Lane is crossed twice (Plot 32/11 and Plot 32/3) by the proposed cable route (Works No. 9 – Cable installation works (including construction haul road and operational access)), which will involve open-cut trenching installation methodology, and therefore the Cable package of rights and restrictive covenants are sought, as identified in Schedule 7 of the **Draft Development Consent Order [PEPD-009]**. Please see comments regarding maintenance of access below. **Plot 32/13 (Unregistered Land)** The small strip of land (Plot Number 32/13) at the end of Kings Lane, over which the Land Interest has private rights of access, is unregistered. Kings Lane itself (to the west of Plot 32/13) is a privately owned road. To the east of Plot 32/13 lies Plot 32/14, which is also

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	the roadway to use as they see fit. The applicant has made no provision for a diversion or similar to ensure continuous use of the roadway during works. By downplaying the significance of the roadway, the applicant is downplaying the significance of the DCO and the implications that could flow from ownership and lane closure. This is a choice the applicant has made, even though they are fully aware their categorisation is incorrect. On 29 Nov 2022 Carter Jonas, the applicant's agent, further corresponded by email to the writer (with copies to various Rampion/ RWE addresses) stating 'We have noted on file that King's Lane serves numerous dwellings and farming activities'. In total, ten high value homes with a further two consented properties for development and two farming enterprises (involving c.100 ha across all interests) gain their only access over King's Lane. If the applicant's proposals adversely affect these third-party rights the compensation liability could be significant, potentially as high as £20m. The applicant is promoting the rationale for its actions as the 'tidying up' of a small strip of unregistered land and has generally flattered its position by miscategorising the nature of King's Lane. This amounts to a bad faith misrepresentation to the Planning Inspectorate and Secretary of State. A more balanced approach under the DCO would be to:- 1. Secure only those rights of access or easements required for operational purposes alongside any preexisting rights or easements and 2. Ensure any third-party rights or easements can be enjoyed continuously and without undue interruption by appropriate working methods and scheduling. For example, in the case where conflicting needs arise, the cable could be moled rather than trenched. The applicant purports to be an experienced and sophisticated operator in its field and keen to live with its neighbours. This skill could be utilised to achieve this project by having proper regard for the legal position of those affected. In conclusion, this DCO application is deeply flawed: - 1. It is premature; the applicant has undertaken insufficient due diligence into affected party rights or easements. It is seeking a broad-brush approach to railroad its proposals through. 2. It has undertaken inadequate consultation with affected parties or has ignored or discounted unhelpful consultation. Either way it is in breach of its statutory duty. It cannot rely on a 'last resort' test. 3. It cannot satisfy an overriding public interest test and risks challenge under Article 8 HRA 1998 4. Specifically in this case, it fails to recognise the huge potential compensation which could arise if longstanding rights and easements are adversely affected. It is uneconomic. We request that we (or our representative) be granted the right to speak at any hearing during the Pre-examination stage of the process.		unregistered, but falls within the adopted highway extent as verified by data provided by West Sussex County Council. The adopted highway then extends onto Kent Street to the east. The freehold ownership of Plots 32/13 and 32/14 is unknown (they are both unregistered on the Land Registry). As Plot 32/13 is unregistered and unadopted, the Applicant followed a process in accordance with its land referencing methodology (as per the Land Referencing Methodology within the **Statement of Reasons** **[PEPD-012]**, to seek to ascertain who owns the land. The Applicant placed a notice on site on 6 April 2023 and maintained this weekly for six weeks requesting for someone to come forward if they believed they owned the land. No responses were received. The Applicant subsequently placed a notice pursuant to Section 56 of the Planning Act 2008 on site between September and November 2023, which the Land Interest refers to having seen. This notice is in accordance with Regulation 8 of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) and Regulation 16 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended), the purpose of which is to provide notice of the acceptance of the application of the Development Consent Order for examination by the Planning Inspectorate. **Consultation** The Applicant has consulted with the Land Interest since July 2021. Kings Lane/ Moatfield Lane was included within the Proposed DCO Order Limits that was consulted upon in the Highways Consultation in April 2023. Consultation packs were provided at that time to Kings Lane/ Moatfield Lane residents, including the Land Interest, as it was assumed that those dwellings have rights of access across Kings Lane in order to access their land and property. Chapter 6 of the **Consultation Report** **[APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. **Definition of Kings Lane/ Moatfield Lane within the Book of Reference** The Applicant accepts that Kings Lane/ Moatfield Lane is a private road which also has a public bridleway and public footpath running along parts of it. The Applicant has reviewed the West Sussex County Council Public Rights of Way plan which confirms that bridleway 1730 runs the length of Kings Lane and part of Moatfield Lane. Further information can be found online: https://www.westsussex.gov.uk/land-waste-and-housing/public-paths-and-the-countryside/public-rights-of-way/public-rights-of-way-imap/imap/ As detailed within the **Book of Reference** **[APP-026]**, the DCO allows for the 'Acquisition of New Rights or the Imposition of Restrictive Covenants over land being private road, verge (Kings Lane), public bridleway (COW/1730/3), public footpath (COW/1783/1). **Bridleway**

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			The DCO seeks to temporarily close the bridleway 1730 across the cable corridor for which a diversion will be in place between points 50a and 50b. As mentioned above, the private road access will not be diverted. The Applicant is mindful there may be some temporary disruption during construction. However, during the operational phase, access rights along the lane will be unaffected, and the Applicant's rights will be exercised in common with other private rights. **Maintenance of Access** Mindful of residents' concerns, the Applicant updated the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** at the pre-examination deadline. Additional detail has been provided at Section 5.7.10 to explain how construction and access will be managed. In summary: • All crossings of PMA will be developed to allow emergency access at all times (through the provision of road plating); • Contractors will be required to accommodate reasonable requests for access during the working day by temporary plating of trench unless a suitable diversion if provided around the works; • The trench will be plated or temporarily backfilled outside of construction working hours where feasible to restore access, unless a suitable diversion is provided around the works; • Any access restrictions or closures will be communicated to all residents and businesses with affected rights of access (as recorded in the **Book of Reference** **[APP-026]** or successor document); and • A nominated point of contact on behalf of the Applicant will be communicated to all residents and businesses at least three months before the start of construction who can be contacted in case of any concerns of grievances. Matters relating to construction practices and project commitments are raised within this Relevant Representation have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'** (below). **Protection of Utilities** Existing utilities will be protected and crossed in accordance with standards set by the operator, as described in Section 2.9 of the **Outline Construction Method Statement** **[APP-255]**.

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			Rights The rights sought are necessary for the proposed development, are for a legitimate purpose and are no more than is reasonably required for the construction, operation, maintenance and protection of the project. Impacts on private rights will be kept to a minimum during the construction period and will be unaffected during the operational phase of the project. As explained in Section 13 of the **Statement of Reasons** **[PEPD-012]** any infringement with human rights is proportionate and legitimate and in accordance with the law, and is outweighed by the significant public benefits that will be delivered.

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Table LI29 Applicants Response to Kathryn Victoria Winfield [RR-188]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI29.1	I would like to register my concerns and extreme implications the proposed intrusion through our paddocks will have . I am an Olympic team dressage rider ,trainer and 20 national champion .I ride and train my horses based at my home at [REDACTED] , that has been specifically designed to facilitate this purpose, Rampion are proposing to dig up to come through two of our (4 paddocks) if the hedge of our neighbouring property that provide screening from our Nieghbours livestock is not replaced , these paddocks will no longer be able to provide a safe and secluded environment for our high level performance horses (worth millions) The ground that is replaced will not provide a steady underfoot surface , should the horses run around for several years , These are the only paddocks we have avalible on our property , Furthermore I believe that the land directly adjacent to my training arena , will be used for the storage of the heavey machinery , if this is the case , I will Not be able to train my horses , in a reasonable and safe manner , as they will be spooked and disturbed by the noise , I have 11 stables and high level performance horses training to the highest Olympic levels , of considerable value , the property is specifically designed for this purpose . So this would make our facilities completely unsafe for this purpose .!as the horses are very powerful , and excitable , and would be too unsafe and dangerous to handle in a disruptive and noise environment . Especially if the paddocks are unsuitable , with nowhere for them to have some outside safe and free down time .	030	Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 30 of the **Onshore Works Plans** **[PEPD-005]**. The Land Interest owns paddock land affected by the proposed cable route (Works Area 9 – Cable installation works (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. The area affected by Works No.9 comprises two paddocks, being Plot 30/3 shown coloured blue on the **Land Plans Onshore** **[PEPD-003]**. There are two paddocks remaining to the east of the affected land which can be accessed from the wider land holding to the east and therefore are not affected. **Fencing** - The Applicant confirms that the construction area within the Order Limits will be fenced off for the duration of construction. This will impact the two western paddocks. The Applicant will seek to engage further with the Land Interest regarding detailed construction access design and accommodation works in accordance with the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**. The Applicant is willing to discuss appropriate and reasonable mitigation measures during construction of the project to minimise disturbance to the Land Interest. **Reinstatement** The Applicant acknowledges the Land Interest's concerns regarding the reinstatement of their paddocks and surrounding hedgerows. As detailed in Section 4.10 of the **Outline CoCP** **[PEPD-033]** and Section 7.10 of the **Outline Landscape and Ecology Management Plan (LEMP)** **[APP-232]**, the Applicant is committed to reinstating the work area to pre-existing conditions as far as reasonably practical in line with the Materials Management Plan (MMP) (C-69) and Defra 2009 Code of Construction Practice for the Sustainable Use of Soils on Construction Sites PB13298. Habitat reinstatement will be monitored for a period of ten years. As stated in Section 4.5 of the **Outline LEMP** **[APP-232]**, all hedgerows temporarily lost would be reinstated within two years of its loss, with planting occurring during the first available planting period once reinstatement has begun this might mean that planting of a hedgerow begins slightly after this due to seasonal constraints. These hedgerows would be monitored twice yearly in years one, two, three, four and five, and annually (in spring / summer) in years six to ten following reinstatement.

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			As detailed in Figure 7.2.1 – Hedgerow retention and treeline retention plan, found in Appendix B of the **Outline CoCP** **[PEPD-033]**, the hedgerow on the southern boundary of the Land Interest's paddocks (H384) and the hedgerow on the western boundary in the far south-west corner (H383) will be notched to 14 metres. Figure 7.2.3 – Scrub retention plan, found in Appendix B of the **Outline CoCP** **[PEPD-033]**, the scrub features on the northern boundary of the Land Interest's paddocks (HS1383) will be cleared to 30 metres. The Applicant notes the Land Interest's concerns regarding the impact of noise on noise produced by construction. Section 5.4 of the **Outline CoCP** **[PEPD-033]** provides information on management measures and mitigation for noise and vibrations. A Noise and Vibration Management Plan (NVMP) will be produced to secure appropriate measures for the stage specific Code of Construction Practice, which will be developed in accordance with the **Outline CoCP** **[PEPD-033]**. Paragraph 5.4.8 of the **Outline CoCP** **[PEPD-033]** also provide details of Best Practicable Means that will be adopted to minimise noise during construction.

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Table LI30 Applicant's Response to Paul Lightburn [RR-293]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI30.1	I object to the application on 3 counts. 1. Failure to consult properly. 2. Failure to fully evaluate other less damaging and less costly alternatives. 3. Failure to consider and evaluate fully the adverse environmental impacts Additionally, there are specific local reasons why this current application should be refused. 1. The supplementary "Notice of Acceptance of a DCO" includes the threat to acquire rights over which I have existing rights including unfettered right of access between my home and the highway. 2. The cable route plans fail to recognise my existing right of access along the lane to my home, which the plan states will be closed while construction work takes place. In support of my objection, I draw the following to the Planning Inspectorate's attention. The supplementary "Notice of Acceptance of a DCO", which was pinned to a gate post refers specifically to Plot Number 32/13, identifies what the applicant refers to as 'land of which ownership is currently unknown.' The applicant's consultation process for this notice was non complaint. None of the resident of King's/ Moatfield Lanes were consulted or informed about the "Plot Number 32/13 Notice" as required by the Planning Act 2008. The ownership status of this piece of roadway is disputable. There has been no direct contact with any of the landowners or owners of any third-party rights to discuss ownership or explain what is proposed and explain how the applicant intends to change our existing rights or how they might be affected by any, change to, or the creation of new rights. There can be no compelling operational reason why this very small piece of roadway adjacent to the highway needs to be compulsory acquired or for our pre-existing rights of access and easements for utilities to be changed. This creates a potential 'ransom strip', the purpose of which, in terms of access rights, is, as stated by Rampion, only required for post construction operational access. The applicant does not need to acquire ownership to secure rights of access over this strip at the entrance to King's Lane. All legitimate users can enjoy full access and no other utility company has had any difficulties accessing their equipment on land adjoining King's Lane and Moatfield Lane. Plan EN010117-000161-2.5 – "Rampion 2 Access, Rights of Way and Street Plans.pdf" sheet 32 categorises King's Lane as a "bridleway and public footpath". This is incorrect, it is a 24 hour/7 days a week access road, privately owned and subject to legacy access rights granted to all properties on the lane in their title deeds by the title deed holders of the roadway. The plan, referenced above, shows that King's Lane will be closed in 2 places at Points 48a – 48b and 50a – 50b.	031	**Context** Details of the operational access as it passes through this location are shown on Sheet 32 of the **Onshore Works Plans [PEPD-005]**. The Land Interest has private rights of access over Kings Lane/ Moatfield Lane, (Plots 32/2, 32/3, 32/4, 32/5, 32/6, 32/11, 32/12/, 32/13 and 32/15) shown coloured blue on the **Land Plans Onshore [PEPD-003]** which provides access to their residential property. **Operational Access** Kings Lane/ Moatfield Lane is within the Order Limits for an operational access (Works No. 15). The Applicant seeks new rights (i.e. operational access rights) over Kings Lane/ Moatfield Lane, for this purpose, but does not propose to acquire the land. The rights sought by the Applicant will be exercised in common with existing private rights of access and will be entirely consistent with the existing use of the land as an access road. No ransom strip is created as the Applicant will not own the road and is not intending to purchase Plot 32/13. Operational Access Rights are defined in Schedule 7 of the **Draft Development Consent Order (DCO) [PEPD-009]** and in summary comprise rights of access with or without vehicles and equipment: *for the purposes of operation, maintenance and decommissioning of the authorised development*". The rights are expanded on further in Schedule 7. Kings Lane and Moatfield Lane are marked on the **Access, Rights of Way and Street Plans [APP-012]** as bridleway and public footpath because bridleway 1730 and footpath 1782 represent the highest level of general public access. Operational access (for light personnel or 4x4 vehicles) will be required throughout the project's lifetime, for inspections and maintenance of the cable route. It is anticipated that the Applicant would need to access the lane by either walking or driving, to carry out occasional maintenance responsibilities. **Cable Installation Works** In addition, Kings Lane/ Moatfield Lane is crossed twice (Plot 32/11 and Plot 32/3) by the proposed cable route (Works No. 9 – Cable installation works (including construction haul road and operational access)), which will involve open-cut trenching installation methodology, and therefore the Cable package of rights and restrictive covenants are sought, as identified in Schedule 7 to the Order. Please see comments regarding maintenance of access below. **Consultation (Point 1)** Kings Lane/ Moatfield Lane was included within the draft Order Limits that was consulted upon in the Highways Consultation in April 2023. Consultation packs were provided at that time to

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	The applicant has made no provision for a diversion or alternative means of access to allow householders, as is their right, to have continuous access to the public highway during construction works. On the wider issues, particularly environmental, the applicant's failure to consider and mitigate fully the significant adverse environmental impacts, caused by the proposed routing of the on-shore cables and the location of the new, unnecessary substation, proposed for Oakendene near Cowfold. Other options with far fewer adverse environmental impacts appear not to have been fully considered and evaluated and given sufficient consideration during the design, development and optioneering phases.		Kings Lane/ Moatfield Lane residents as it was assumed that those dwellings have rights of access across Kings Lane in order to access their land and property. The Land Interests were omitted from Plots 32/6, 32/12 and 32/13 along Kings Lane/ Moatfield Lane within the **Book of Reference** **[APP-026]** in error. The Title documents have since been reviewed and the Book of Reference has since been updated it to include Angela and Paul Lightburn as having rights of access over Plots 32/6, 32/12 and 32/13. The updated Book of Reference will be available at the next requested deadline by PINs (Deadline 6). However, these changes will be captured in the revision of the **4.4 Compulsory Acquisition - Land Rights Tracker** and accompanying change log at Deadline 2. Chapter 6 of the **Consultation Report** **[APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. **Plot 32/13 (Unregistered Land)** The small strip of land (Plot Number 32/13) at the end of Kings Lane, over which the Land Interest has private rights of access, is unregistered. Kings Lane itself (to the west of Plot 32/13) is a privately owned road. To the east of Plot 32/13 lies Plot 32/14, which is also unregistered, but falls within the adopted highway extent as verified by data provided by West Sussex County Council. The adopted highway then extends onto Kent Street to the east. The freehold ownership of Plots 32/13 and 32/14 is unknown (they are both unregistered on the Land Registry). As Plot 32/13 is unregistered and unadopted, the Applicant followed a process in accordance with its land referencing methodology (as per the Land Referencing Methodology within the **Statement of Reasons** **[PEPD-012]**, to seek to ascertain who owns the land. The Applicant placed a notice on site on 6 April 2023 and maintained this weekly for six weeks requesting for someone to come forward if they believed they owned the land. No responses were received. The Applicant subsequently placed a notice pursuant to Section 56 of the Planning Act 2008 on site between September and November 2023, which the Land Interest refers to having seen. This notice is in accordance with Regulation 8 of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) and Regulation 16 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended), the purpose of which is to provide notice of the acceptance of the application of the **Development Consent Order (DCO)** **[PEPD-009]** for examination by the Planning Inspectorate. **Definition of Kings Lane/ Moatfield Lane within the Book of Reference** The Applicant accepts that Kings Lane/ Moatfield Lane is a private road which also has a public bridleway and public footpath running along parts of it. The Applicant has reviewed the West Sussex County Council Public Rights of Way plan which confirms that bridleway 1730 runs the length of Kings Lane and part of Moatfield Lane. Further information can be found online:

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			https://www.westsussex.gov.uk/land-waste-and-housing/public-paths-and-the-countryside/public-rights-of-way/public-rights-of-way-imap/imap/ As detailed within the **Book of Reference** **[APP-026]**, the DCO allows for the 'Acquisition of New Rights or the Imposition of Restrictive Covenants over... land being private road, verge (Kings Lane), public bridleway (COW/1730/3), public footpath (COW/1783/1). **2: Considerations of Alternatives** **Substation Alternatives:** Matters relating to the Oakendene Substation site selection raised within this Relevant Representation have been responded to by the Applicant in **Table 6.20 'Design and siting of the onshore substation at Oakendene'** and further information is available in Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (Document reference 8.25) submitted at Examination Deadline 1. **3: Environmental Impacts** For traffic related points please refer to the Applicant's response in reference **LI17.1** above. **Maintenance of Access** Matters raised within this Relevant Representation have been responded to by the Applicant in **Table MPB2 'Environment and disturbance' Table MPB2 'Environment and disturbance'**. Temporary road closures to facilitate the open cut trench crossing of Moatfield Lane (48a-48b) and Kings Lane (50a-50b) are shown within the **Access, Rights of Way and Streets Plans [APP-012]**. The strategy to maintain private means of access during this period is described in Paragraph 5.7.10 of the **Outline Code of Construction Practice (CoCP)** [**PEPD-033**]. The following general principles will apply to the managed or private means of access during the cable route construction: • Any access restrictions or effect on individual properties will be kept to a minimum and the Applicant will work with local stakeholders to develop individual solutions to keep disruptions as slow as is reasonably possible; • All crossings of private means of access will be developed to allow emergency access at all times; • Contractors will be required to accommodate reasonable requests for access during the working day by temporary plating of the trench unless a suitable diversion is provided around the works;

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			• The trench will be plated or temporarily backfilled outside of construction working hours where feasible to restore access, unless a suitable diversion is provided around the works; • Any access restrictions or closures will be communicated to all residents and businesses with affected rights of access; and • A nominated point of contact on behalf of the applicant will be communicated to all residents and businesses at least three months before the start of construction. A final Code of Construction Practice will be required to be submitted and approved on a staged basis, in accordance with the **Outline CoCP** **[PEPD-033]**, pursuant to requirement 22 of the **Draft Development Consent Order (DCO)** **[PEPD-009]**. The rights sought are necessary for the proposed development, are for a legitimate purpose and are no more than is reasonably required for the construction, operation, maintenance and protection of the project. Impacts on private rights will be kept to a minimum during the construction period and will be unaffected during the operational phase of the project. The Relevant Representation questions why Kings Lane and Moatfield Lane are recorded as a bridleway. The roads are marked on the **Access, Rights of Way and Street Plans** **[APP-012]** as bridleway and public footpath because bridleway 1730 and footpath 1782 represent the highest level of general public access.
LI30.2	Expert organisations including Natural England have submitted evidence in support of the environmental damage that will result if this proposal is not refused Options, such extending the existing high voltage substation at Bolney, rather than building an unnecessary new substation on the edge of a village, were not fully evaluated. There should be no need to create another substation site when the existing nearby site at Bolney has capacity. This option could make use of the existing infrastructure site rather than creating another substation, which would require far less underground cabling across roads, fields, ancient woodland and hedge rows to the south and south east of Cowfold village.		Information regarding the site selection process has been provided by the Applicant in response **LI17.1** (above). The Applicant's response to Natural England's Relevant Representation is provided in **Tables 4-6** to **4-13** (above).
LI30.3	Nor has the congestion caused by additional traffic on the already heavily congested and polluted A272 and adjoining single track lanes during the construction and operation of the unnecessary additional substation, been fully evaluated and mitigated. Another option with far fewer adverse environmental impacts - following the existing Rampion 1 cable route, does not appear in any publicly available papers, suggesting it was not given thought at the design feasibility stage. My objection is made on principal and is independent of any opinions I may have of the wider Rampion 2 project. As such it falls within Article 8 of the Human Rights Act 1998 and European Convention of Human Rights and all provision in compulsory purchase law. The current proposal		For traffic related points please refer to the Applicant's response provided to **LI17.1** (above).

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	should be rejected and the developers asked to rethink their options and improve their consultation and stakeholder engagement process. I request the right that my representative or I have the right to speak at any hearing during the examination stages of the process.		

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Table LI31 Applicants Response to Mrs Nicola Crichton-Brown [RR-258]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI31.1	31 October 2023 Our Ref: DNB785/HC The Planning Inspectorate National Infrastructure Directorate Temple Quay House Temple Quay Bristol BS1 6PN Dear Sirs, [REDACTED] Rampion 2 response to section 56 Notice I write on behalf of my client, Mrs Nicola Crichton-Brown, and Keith James Bruce-Smith and Janet Lucy Gibson, in their capacity as Trustees of The Anthony Crichton-Brown Settlement 2017. I am writing in response to the section 56 Notice, received in relation to the Rampion 2 project. I take this opportunity to first, give notice of the aforementioned parties' interest, as freehold owners of [REDACTED]; a property that is affected by the scheme. I also outline the key outstanding concerns, regarding the impact that Rampion 2 will have on the property, as follows: 1) The proposed access route is deemed unsatisfactory. The driveway serves as the only access for both farm and residential traffic. The shared use of this with construction traffic, will cause a conflict in use, and presents serious safety and privacy concerns. An alternative route has been proposed, that runs separately from the main driveway, and I would urge that this is given serious consideration, in order to mitigate the risk associated with the route that has been currently proposed. 2) The extensive powers being sought across the whole farm, as identified under the Option Land heading of the Key Terms, seem comparably disproportionate to the actual area of land that is required for the construction process itself. I request that this is reviewed, and the area refined, to reduce imposing any greater impact on the amenity of the property, than is strictly necessary. We hope that we can work with the project, to reach an outcome that satisfies both parties, and reduces both the immediate and long-term impact of the scheme.	033	**Context** Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheets 26 and 27 of the **Onshore Works Plans** **[PEPD-005]**. The Land Interest owns a farm to the east of B2135. The proposed cable route (Works No.9 – Cable installation works (including construction and operational access)) affects arable and pasture land owned by the Land Interest to east of the B2135, but to the west of the main farmhouse. The Applicant is therefore seeking a package of Cable Rights and a Cable Restrictive Covenant over the area comprising Plots 26/15 and 27/1 as shown coloured blue on the **Land Plans Onshore** **[PEPD-003]**. The driveway to the farmhouse, farm buildings and other residential dwellings is affected by both permanent and temporary rights as a result of the proposals. There is a proposed operational access (Works No.15) along part of the driveway, for which a package of permanent operational access rights is sought, that affects Plot 27/2 (as shown blue on the **Land Plans Onshore** **[PEPD-003]** in order to provide access to the cable route. A short section of the driveway at the junction to the B2135 is included within the Proposed DCO Order Limits for temporary construction access (Works No.13). 'Construction Access 48' also affects a strip of agricultural land to the north of the driveway, to provide access to the cable construction corridor. The Applicant seeks a package of Construction Rights over Plots 27/4 and 27/5 as shown in green in the **Land Plans Onshore** **[PEPD-003]**, which are owned by the Land Interest. An initial section of the driveway is included within the Order Limits for Construction and Operational Access (Works No.14). Therefore, the combined construction and operational access rights package is sought over Plot 27/3 as shown in blue on the **Land Plans Onshore** **[PEPD-003]**. **1: Construction Access** As detailed within the **Outline Construction Traffic Management Plan (CTMP)** **[PEDP-035a]**, all temporary construction accesses will be designed to follow design standards contained within the Design Manual for Roads and Bridges and to meet relevant West Sussex County Council requirements. Detailed design of this access, including any appropriate traffic management controls for the lane itself, will form part of stage specific CTMP secured pursuant to requirement 24(1)(a) of the **Draft Development Consent Order (DCO)** **[PEPD-009]**. However, mindful of residents' concerns, the Applicant updated the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** at Pre-Examination Procedural Deadline A. Additional detail has been provided at Section 5.7.10 to explain how construction and access will be managed. In summary:

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- Access restrictions will be kept to a minimum, with a diversion provided if possible;
- Contractors will work with local stakeholders and accommodate reasonable requests for access;
- The trench will be covered outside of working hours, and access will be restored in emergencies; and
- Closures will be communicated to local residents in advance.

Consideration of Alternative Construction Access Proposal

An existing field gateway on Bines Green (to the north of the entrance into the farm) was put forward by the Land Interest as an alternative construction access in a site meeting in August 2021. This was also put forward in an Impact report prepared by Savills (on behalf of the Land Interest) dated March 2021. The rationale for the Applicant not taking forward this proposal for access was explained verbally at a site meeting in May 2022 and via Letter in January 2024 which stated:

"*The alternative access proposal was reviewed by the Rampion 2 team following the initial site meeting in August 2021 and Landowner Surgery in September 2021. It was decided not to progress with the proposed alternative construction access for the following reasons:*

- *The Highways team concluded that the existing access is more favourable as the proposed access off the B2135 comprises of a reduced existing access area, and entering and egressing at this location presents a greater highway safety risk due to proximity of increased speed limit area of highway. If the option were progressed. improved visibility splays would be required.*
- *The impact on trees and vegetation would be greater due to visibility splay requirements in relation to the above.*

We have requested further explanation and comments from the Highways and environmental team, who comment as follows:

The primary consideration of the alternative access in this location is the visibility splay requirements, which are taken from the DMRB (Standards for Highways 2020 and 2021) and specifically CD123 (Geometric design of at-grade priority and signal controlled junctions) and CD109 (Highway Link Design). The visibility splay requirements for access junctions are based upon the stopping sight distance for oncoming traffic with the values from DMRB replicated in Table 4-2 of the Outline Construction Management Plan."

Health & Safety concerns regarding Access 48

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			Detailed design for the temporary construction and operational accesses will be included in the stage specific management plans and will be submitted to the local highways authority prior to the start of construction. Design will take into consideration the requirement for residential access to Eatons Farm and will comply with highway safety standards in relation to the junction with the B2135 and further appropriate health and safety measures along the construction access. **Outline Construction Traffic Management Plan [PEPD-035a]** Section 4 for Access Strategy and paragraphs 5.7.7 and 5.7.10 in the **Outline Code of Construction Practice [PEPD-033]**. Appropriate traffic management measures will be implemented to ensure the safety of all users of the access and adjacent public or private rights of way which may be subject to construction traffic. **2: Order Limits** As detailed above, in addition to the construction and operational access which is referred to above, land owned by the Land Interest is required for construction, operation, maintenance and protection of the permanent cable (Works no.9). A package of Cable Rights and a Cable Restrictive Covenant (as defined in schedule 7 to the Order) is therefore sought over this land. The Applicant does not agree with the Land Interest's comment that the powers sought are disproportionate to the actual area of land required for construction. As explained by the Applicant in the **Statement of Reasons** (Para 9.11.7-9.11.9) **[PEPD-012]**, not all of the land owned by the Land Interest within the Order Limits will need to be permanently acquired. Flexibility is sought to enable the construction of works anywhere within the area identified for those works on the **Onshore Works Plans [PEPD-005]**, within which area there will be a circa 40m construction corridor and 20m permanent easement corridor, save for in certain circumstances such as where HDD techniques are employed. The final routing is not fixed and will be dependent upon matters such as pre-construction surveys. As explained in the paragraphs in the Statement of Reasons, the Applicant will seek the minimise the extent of permanent rights required by taking temporary possession first of the wider construction corridor and then permanently acquiring the rights required over the narrower area when the location is known. The Applicant welcomes the Land Interest's willingness to discuss matters further and confirms that it will engage further with the Land Interest regarding the refinement of the final land area and appropriate and reasonable mitigation measures during construction of the project to minimise disturbance to the Land Interest.

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Table LI32 Applicants Response to TC Rampion OFTO Ltd [RR-384]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI32.1	TC Rampion OFTO Limited owns and operates the offshore transmission system associated with the Rampion offshore windfarm. This includes the offshore substation, on and offshore cables, the Twineham substation, and connecting infrastructure to NGET's Bolney Substation. TC Rampion OFTO holds a Transmission Licence under section 6C(5) of the Electricity Act 1989 and as such is a statutory undertaker. Through some recent high-level discussions with RWE we understand that: - Rampion 2 is looking to construct its onshore export cables through land owned by TC Rampion OFTO Limited (land parcel 34/24 as per land plans submitted in the DCO). The proposed works area is in close proximity to Rampion 1 assets, with the proposed cable route crossing our cables that connect to Twineham to the National Grid Bolney substation. - Rampion 2 is seeking a voluntary land agreement with TC Rampion OFTO Limited to procure rights for the Rampion 2 cable easement. We currently have no agreements in place with Rampion 2, nor have we had any meaningful discussions. In principle we have no objections to the Rampion 2 development; it is however imperative that our assets and operational activities are protected from any detrimental impacts of the Rampion 2 development. As such we would like to register our objection to the development, pending the satisfactory outcome of negotiations with Rampion 2 in respect of any land or crossing agreements and would expect protective provisions to be provided in any order for the benefit of TC Rampion OFTO.	035	The Applicant first contacted TC Rampion OFTO in April 2023. The Applicant has been in regular correspondence with a representative of the Land Interest since October 2023, with an agent appointed on their behalf in December 2023. Details of the proposals in this location are shown on Sheet 34 of the **Onshore Works Plans [PEPD-005]**. The Land Interest owns the freehold of Plot 34/24 which comprises grassland and hedgerow adjacent to the existing Rampion 1 substation. The Rampion 1 substation is outside of the Rampion 2 Order Limits. The Land Interest is the holder of an electricity transmission licence and has a leasehold interest in Plots 34/20, 34/21 and 34/22, immediately to the north of their freehold interest. Discussions are ongoing with the freehold owner of this land. The Land interest also owns electricity cable assets located in the freehold land and also in adjoining land to the west which connect into Bolney 400kV Substation. Heads of Terms were issued in October 2023 and the agent has confirmed that the Land Interest would like to work collaboratively with the Applicant to agree terms. The Applicant had a meeting with the Land Interest on 5th February 2024 and subsequently issued template land agreements and a template crossing agreement on 9th February 2024. The Applicant seeks to negotiate rights for an easement and asset protection measures through the combination of a Land agreement with associated template Crossing Agreement. The parties are in discussions over the need for protective provisions

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Table LI33 Applicant's Response to Emily Mulcare-Ball [RR-113]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI33.1	I object to the proposals for Rampion II. I believe Oakendene was chosen as during the initial stages there were very few objections from the Cowfold area as local people were unaware of the size and location of the scheme, this is due to information not being readily supplied by Rampion II to the Cowfold area and residents. Please find below points of issue which I believe should be addressed at the next examiner stage. I will be expanding on these points below at a later examination stage but would like PINS to take note at this time We live locally to the proposed development and have not been consulted in an adequate manner on a number of points. Indeed Rampion have often failed to reply to my emails and calls and questions which will itemised in my future representations in the next planning stage I believe that the DCO proposal represents a material change to previous sporadic information giving by the applicant, and is now so different from the one consulted on, that it requires a reopening of the consultation: • During the informal consultation and the first round consultation Kent Street was recognised as ' a single track lane unsuitable for HGVs', being concerned I wrote to Rampion II and received an email on the 30th July 2021 from James d'Alessandro (Commercial Manager Rampion) about the use of Kent Street by construction traffic saying: "In January 2021, the Council responded to the Rampion 2 informal consultation process to the effect that Kent Street is not deemed appropriate for temporary construction access..." . Yet now we discover that Kent Street is expected to bear the significant burden of avoiding the AQMA in Cowfold, and also for some reason, reducing the impact on the much wider and safer Wineham Lane. There is no Traffic Impact Statement for Kent Street, although they have completed one for Wineham Lane • Kent street is a quiet lane for single use traffic with soft verges on both sides of the road and only intermittent place for cars to pass. Indeed, there was an accident on the A272 (one of many) on the 20/10/23 with a large overturned trailer and the road was closed with a diversion through Kent Street for days afterwards. This caused complete chaos on the local lanes with time delays and extensive damage to the verges along Kent Street (and other small lanes) with cars unable to pass. It is not viable to use Kent Street for even temporary access as per conversations with Rampion on the point above. • The use of the western Oakendene compound was originally as a storage compound. Now it appears to be intended also as a huge car park from which many thousands of heavy and lighter vehicles will come and go. • Surface water flooding at the proposed site which has not been adequately addressed. We own land nearby and can confirm the profile of the land is minimum top soil and then below metres of clay. My fields are completely water-logged during Oct-March and I cannot get farming machinery onto them to cut the grass. The whole area has metres of clay below a thin band of top soil and this makes them boggy for months over the winter period. Construction and construction traffic would be almost impossible over Winter without vast	036	**Context** Details of the Order Limits as they overlap with the Land Interest's land holding are shown on Sheet 31 of the **Onshore Works Plans** **[PEPD-005]**. The Land Interest owns a residential property to the east of Kent Street. The western boundary of their freehold title borders Kent Street and includes a section of hedgerow. The hedgerow is located within a proposed temporary construction access along Kent Street. The area affected by Works No.13 comprises Plot33/6 as is shown coloured blue in the **Land Plans Onshore** **[PEPD-003]**. In addition, the Applicant identified the Land Interest as a presumed owner of part width of the subsoil of the highway, comprising Plot 33/4 (which is unregistered), which is also affected by Works No.13. **Consultation and Engagement** The Applicant has been in regular correspondence with the Land Interest since July 2021, and has been included within consultations since then. The Applicant has responded (via email) to queries raised by the Land Interest in December 2023. These queries included queries on the use of Kent Street for construction, including traffic queries. Chapter 6 of the **Consultation Report** **[APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. For further information please see document 'Promotion of Rampion 2 Consultations in and around Cowfold 2021-2022'. This documented is appended at **Appendix 15 Promotion of Rampion 2 Consultations in and around Cowfold 2021-2022**. **Consideration of Oakendene Substation Alternatives** **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** describes the alternatives studied by the Applicant and a comparison of their environmental effects across the project as a whole. This includes the alternatives considered and consulted on prior to the DCO Application. As described in **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**, the Proposed Development has been developed through a multi-disciplinary design process including environment, engineering, landowner and cost considerations. The Applicant has sought to avoid, reduce or minimise the effects through the design process and also by identifying and securing embedded environmental measures. It is acknowledged that some residual effects remain.

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	engineering costs and where would surface water be pumped locally. Rampion have only provided desk top studies which bear little resemblance to local lived experiences of the area from Oct-March. • The complicated traffic management plans a huge compound at the industrial estate, will cause far greater impacts on traffic flow than anything discussed during the consultation period • 'No HGVs will go through the AQMA of Cowfold 'has now become HGVs 'from the Oakendene substation compound' and 'unless necessary'. The HGV claims made during the consultation were misleading as in fact there will be over 4000 HGVs going to the A281-there is no other way, and half the many thousands of private vehicles coming daily to the Oakendene compounds will come through the village. It is now apparent that there will be considerable construction traffic going through Cowfold, yet from FOI requests to the Parish Council it is clear that they believed they had been given assurances before the first consultation, that NO site traffic would pass through the village. This may explain their apparent decision not to oppose the proposals. • 8040 HGVs at Oakendene was the number presented during consultation. We have heard some people choosing to support the proposal as this did not seem like a large number of vehicles overall. Yet the DCO submission now appears to indicate that there will be nearly 21000 HGV movements in and out of the 2 compounds and 70000LGVs (possibly up to 7.5T) • I also wrote to Cowfold Parish Council on the 16/8/21 and went to their monthly meeting on the 13/9/21 (email documentation available) to voice my opinion and objections to Rampion II. I felt they were in possible dereliction of their duty in not informing local residents properly (especially in the village of Cowfold) of the upcoming proposals. They said they did not want to be part of an action group in an email to me in 9/23, which I understand, but their actions or inaction could be deemed to be more on the side of supporting the scheme. Indeed, at the meeting they were nonchalant in listening to my views. I have also seen an email from the Parish Council saying they did not want me to participate in a Zoom call on the proposal with the local MP Andrew Griffith on the 3/9/21 which I find strange if they were acting as neutral on the subject. Only 14 attendees were present on the zoom call with the MP, not a representative sample of the local population at all. This matter does need further investigation and an explanation from Cowfold Parish Council as to their actions. • I would also like to flag the possible loss of employment at the Oakendene industrial estate due to congestion and access issues during the building of Rampion II. This estate has many small and medium size businesses and many of these are only just profit making according to filings at Companies House. Such SMEs (over 130 in the local area) always have tight cash flow issues to keep in business and any disruption could be disastrous for them. This estate provides a very good level of local employment and companies going bust or		Section 3.6 of **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** provides the information on the onshore substation site selection process. Section 3.6 describes the site selection process and the reasons for other sites being discounted based on the multi-disciplinary factors identified in the paragraph above. The selection of Oakendene is clearly stated as favourable for engineering, cost and landowner considerations in paragraphs 3.6.23 to 3.6.25 of **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**. Significant weight was also given to the environmental constraints and related policy in the overall balance of the decision. This Applicant has also developed further embedded environmental measures that have been presented in the application including the design principles in the **Design and Access Statement [AS-003]**, **Outline Landscape and Ecology Management Plan [APP-232]** and **Outline Operational Drainage Plan [APP-223]**. The Applicant has provided further information on the decision to select the Oakendene site for the onshore substation (see Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (**Document reference 8.25**) (submitted at Examination Deadline 1). **Transport:** As part of the DCO process, a thorough assessment of the likely impact of traffic upon the local road network and highway assets during the construction phase of works has been completed. Traffic volumes on Kent Street have been observed and presented in the **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**. Further information has been provided in **Table MPB2 'Environment and disturbance' (Document Reference 8.24)**, with further information provided in the **Table MPB1 'Traffic' (Document Reference 8.24)**. The proposed routing strategy is further detailed in the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]**. The CTMP would be secured by Requirement 5 of the **Draft Development Consent Order (DCO) [PEPD-009]**. **A272 and Cowfold AQMA** To limit the effects on these receptors a range of embedded environmental measures have been provided by the Applicant as detailed within the **Commitments Register [APP-254**] which has been updated at the Examination Deadline 1 submission and secured through the **Outline CTMP [PEPD-035a]** which has been updated at the Examination Deadline 1 submission including: • Commitment C-157: The proposed heavy goods vehicle (HGV) routing during the construction period to individual accesses will be developed to avoid major settlements of Storrington, Cowfold, Steyning, Wineham, Henfield, Woodmancote and other smaller settlements where possible; and

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	moving out of the area would be extremely bad for the local economy. An exhaustive local impact analysis on local business in Cowfold and Oakendene should be implemented.
	• Rampion have not included our home on their RVAA report even though we are close to the development, this omission along with many other homes is damming into the level of detail applied by the applicant in putting their proposal together and bulldozing local people and their views.
	• With regard to local ecology, their data, collected since choosing the Oakendene site, shows this area to be incredibly rich ecologically. It was the ONLY place in the whole project from coast to substation where otters or hazel dormice were found and one of very few areas to have water voles. It has more than half of the entire route's Important Hedgerows. They have barely considered the Cowfold stream area and many other studies have not included much of Oakendene at all. The potential threat of water pollution into the River Adur, from the Cowfold stream. Rampion 1 suffered a diesel spillage. All these underground cables are encased in an oil-filled sleeve to aid cooling. The existing one has already leaked and affected Oakendene lake. Rampion propose to add at least another two cables, thus increasing the risk even further. There will be a frequent use of weedkiller on the site, which will wash into the water courses, wells and streams.
	I believe The Council for the Protection of Rural England are also now looking into the damages of the scheme on the Cowfold environmental area. The loss of 8 Important hedgerows in the local area has also not been properly investigated with the loss of wildlife in them. The submission by Rampion has very little to no data on the local Cowfold wildlife consequences and it is important that a full investigation is submitted of wildlife loss in the area and the loss of so many hedgerows. All of these issues and changes from original plans will be expanded on in Written Representations at the formal Examination Stage of the project. I would also like to request a site visit to Oakendene and a topic-specific hearing at the Village Hall in Cowfold to properly examine the consequences of the proposed substation and its impact on Cowfold and its employment and economy, its community, businesses and environment. We will also request the attendance of the local MP Andrew Griffith at this meeting. Thank you
			• Commitment C-158: The proposed heavy goods vehicle (HGV) routing during the construction period to individual accesses will avoid the Air Quality Management Area (AQMA) in Cowfold where possible.
			
			These commitments are also reflected in Table 5-1 of the **Outline CTMP** **[PEPD-035a]** which has been updated at the Examination Deadline 1 submission and confirms prescribed local Heavy Goods Vehicle (HGV) access routes for all sections of the onshore cable corridor and Table 5-2 which details specific local constraints and proposed management of construction traffic routes.
			
			These commitments ensure that HGV construction traffic will route along the A27 and A23 to gain access to the A272 east of Cowfold wherever possible, thereby avoiding the village centre. Therefore only accesses A-52, A-56 and A-57 will require construction traffic to route through Cowfold Village centre. As calculated by using data included in Table 5-3 of the **Outline CTMP** **[PEPD-035a]** which has been updated at the Examination Deadline 1 submission, the impact of this commitment is the removal of up to 22,000 two-way HGV trips (11,000 HGVs) from Cowfold Village centre over the construction phase.
			
			Whilst commitment C-157 and C-158 (**Commitments Register** **[APP-254]**) discourages traffic from routeing through the Cowfold AQMA for robustness within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**, it has been assumed that approximately 25% of HGV traffic will route through Cowfold from the A24 and A272 east of the village centre when entering or exiting construction accesses at Oakendene, Kent Street or Wineham Lane. This accounts for the potential delivery of material or equipment to / from locations directly west of Cowfold where it would not be possible to adhere to commitments C-157 and C-158 of the **Commitments Register** **[APP-254]** or use of the Strategic Road Network and provides a robust assessment of impacts within Cowfold.
			
			At peak construction, taking account of the construction traffic routing contained within the **Outline CTMP** **[PEPD-035a]** which has been updated at the Examination Deadline 1 submission, the following effects have been identified for Cowfold:
			
			• At A281 south of Cowfold (Receptor 23):
			  ○ An HGV peak week increase of 12 HGVs per day, equivalent to an increase of 7.5% and approximately one HGV per hour; and
			  ○ A total construction traffic peak week increase of one HGV per day and 71 light goods vehicles (LGVs) per day (5-6 per hour), equivalent to a 1.1% increase in total traffic flow.
			• The A281 / A272 in the centre of Cowfold (Receptor 24):
			  ○ An HGV peak week increase of 39 HGVs, equivalent to an increase of 3.5% and 3-4 HGVs per hour; and
			  ○ A total construction traffic peak week increase of 19 HGVs and 154 LGVs (12-13 per hour), equivalent to a 0.7% increase in total traffic flow.

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			• The A272 Station Road west of Cowfold Village centre (Receptor 25):
			  ○ An HGV peak week increase of 39 HGVs, equivalent to an increase of 4.6% and 3-4 HGVs per hour; and
			  ○ A total construction traffic peak week increase of 19 HGVs and 154 LGVs (12-13 per hour), equivalent to a 0.9% increase in total traffic flow.
			• The A272 Bolney Road east of Cowfold Village centre (Receptor E):
			  ○ An HGV peak week increase of 39 HGVs, equivalent to an increase of 5.5% and 3-4 HGVs per hour; and
			  ○ A total construction traffic peak week increase of 19 HGVs and 147 LGVs (12-13 per hour), equivalent to a 0.8% increase in total traffic flow.
			
			Based on these construction traffic flows and the conclusions of the **Chapter 23 Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES (**Document reference: 6.2.32**) (submitted at Deadline 1), no significant effects have been identified in relation to transport receptors within the centre of Cowfold.
			
			Oakendene
			
			The A272 provides access to Oakendene Compound, substation and Bolney Substation extension in addition to construction accesses A-52, A-56 and A-57 on the A281, A-61 and A-64 on Kent Street and A-67 on Wineham Lane.
			
			At peak construction activity Access-62 (Oakendene Compound) will cater for 326 HGV two-way movements and 456 LGV two-way movements across a one week period. This is the equivalent of 156 construction traffic two-way movements per day or 12-13 per hour (approximately 6 entering and 6 exiting the compound).
			
			At peak construction activity Access-63 (Oakendene Substation) will cater for 326 HGV two-way movements and 564 LGV two-way movements across a one week period. This is the equivalent of 178 construction traffic two-way movements per day or 14-15 per hour (approximately seven entering and seven exiting the access junction).
			
			Based on these construction traffic flows no significant effects have been identified at Oakendene.
			
			Ecology:
			
			Terrestrial ecology and nature conservation matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'** with further information provided in the **Table 6.3 'Ecology'** below**.**
			
			Water Environment:

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			Meetings were held with West Sussex County Council (WSCC, as the Lead Local Flood Authority (LLFA)), Horsham District Council (HDC, as the LPA) throughout stakeholder consultation to understand local sources of flood risk at the Oakendene site. Assessment of flood risk to the substation has been based on the EA Risk of Flooding from Surface Water mapping, as detailed in Paragraph 5.7.14 of **Appendix 26.2: Flood Risk Assessment (FRA), Volume 4** of the ES [**APP-216**]. The substation footprint avoids the RoFSW 0.1% AEP (1 in 1,000 year return period) extent for the watercourse to the south of the site (tributary of the Cowfold Stream), as agreed with WSCC as a suitable approach. The Applicant notes and appreciates the information regarding the local ground conditions and winter waterlogging of the ground at the Oakendene substation site. Numerous embedded environmental measures have been set out in 7.22 **Commitments Register** [**APP-254**] (C-28, C-73, C-140, C-77, C-134 and C-141) for the management of surface water within the Proposed Development during both the construction and operational phase, including the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**. Section 5.10.9 of the OCoCP sets out the requirements for the Construction Phase Drainage Plan, stating: *"Details of construction phase drainage will be developed by the Contractor(s) and will be presented in a Construction Phase Drainage Plan and approved as part of the stage specific CoCP. This will be developed following detailed drainage investigations and hydrological assessments to determine potential location-specific risks in relation to the water environment and identify appropriate measures to avoid or reduce risk. .... Details of the Construction Phase Drainage Plan will be subject to consultation with WSCC (and other relevant consenting authorities including the Environment Agency) prior to the start of construction."* These measures will ensure that surface water will be managed onsite to drain the site appropriately and mitigate against the potential for waterlogged ground, whilst ensuring that discharges remain at pre-development rates (to ensure there will be no detrimental impact to downstream flood risk) and avoiding impact on the local environment. This anecdotal information regarding winter waterlogging of the ground at the substation site can be considered further as necessary in the development of the Construction Phase Drainage Plan, by the contractor ahead of and during the construction phase. In the event of extreme rainfall and ground conditions being unworkable, construction works will cease in accordance with embedded measure C-233 in 7.22 **Commitments Register** **[APP-254]**. **Socio Economic:** Socio economic matters raised within this Relevant Representation have been responded to by the Applicant in **Table MPB2 'Environment and disturbance'**

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			(Document Reference 8.24), with further information provided in **Table MPB17 'Impacts on businesses and the local economy' (Document Reference 8.24)**.

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Table LI34 Applicant's Response to Maria Natale Hacon [RR-215]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response	Reviewer
LI34.1	I refer to the most recent letter received from Rampion 2 / RWE dated 25th September 2023 re The Rampion 2 Offshore Wind Farm Order 202X. I, Maria Hacon, am one of the four Trustees of land located at Lyminster, West Sussex (Land Registry Ref: WSX228882). This land is directly impacted by the proposed changes to the onshore cable route for the Rampion 2 Wind Farm and I wish to advise you of our objection to the latest proposals. By way of background this land has been in our family for several decades, it was originally purchased in the 1960s by our mothers and has subsequently been passed into Trust for the benefit of their children. Although the land has been used for a variety of purposes over the years the intention has always been ultimately to sell it for development at a suitable point in time. From 2019 to 2021 we as landowners were approached by a number of property developers, promoters and agents interested in developing our land. We met with several of these parties in early 2021 and subsequently appointed a land agent, Mr W McLaren of McLaren-Clark Consultancy, to market the land for sale/development. The following year we amended the Trustee structure from the two original Trustees to the current structure of four Trustees in order to facilitate the potential sale. This process was time consuming and the Trustees incurred considerable expense to carry out the process. On behalf of the Trustees, Mr McLaren sought expressions of interest from a number of developers and promoters and this was further refined to a list of the parties with whom we wished to progress matters. I can provide this information separately to the Planning Inspectorate if required. After further face to face meetings with the strongest bids - who informed us that they had informal discussions with Arun District Council concerning the suitability of the land for development and were confident planning permission would be granted - the Trustees together with McLaren agreed on a particular developer. It was also specified at the time that our land was particularly favourable for development because of the proposed Bypass which would in turn benefit the local community, the construction of which is currently well under way. This particular developer then made three separate offers within a short space of time, each of which took into account provision for biodiversity and affordable housing, and increased in terms of number of units to be built and the quantum that would be paid for the land. This quantum represents a life changing amount of money for the Trustees. However following notification from Rampion of the proposed revision to the cable route which now runs directly through our land, the developer terminated the negotiations and unsurprisingly, due to Rampion's impositions there has been no further interest from any other parties. The Trustees also incurred significant additional expenditure as part of the process of preparing the land for sale. For example we engaged with a company to undertake physical surveys including winter ground water monitoring. On receipt of notification from Rampion of its revised proposals on 14 October 2022 we had no choice but to ask that this work be halted. However we were charged a considerable amount for costs already incurred by the company in question. The consultation document notes that "land affected by installation works would be fully restored back to its former condition once complete, other than occasional access covers for maintenance". However this does not accurately reflect the impact of the revised cable route on the land in question. The subsequent need for access means that it will not be possible to develop the affected land and effectively eliminates it from development at any point in the future and substantially reduces its future value. The proposals require an initial 50 metre wide working corridor for installation of the cable and thereafter a 20 metre wide	037	**Context** The Land Interest owns pasture land which is affected by the proposed cable route (Plots 4/15, 4/22 & 4/23), works no.9, for which a package of Cable Rights and a Cable Restrictive Covenant are required. The Land Interest also owns a strip of roadside verge which is affected by the proposed temporary construction access (Plots 4/12 & 4/21). Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 4 of the **Onshore Works Plans [PEPD-005]**. The proposed cable route passes through the middle of the Land Interest's land holding, keeping away from residential properties to the North and the Black Ditch (Flood Risk Zone 2) to the South. In addition, an HDD entry / receptor pit for a trenchless crossing of Lyminster Road (A284) is proposed in Plot 4/22. The Land holding has principally been used for grazing and is split into a number of small paddocks. The location of the cable route would result in further splitting of fields for the construction period. Appropriate fencing of the cable route will be used and appropriate crossing points installed on the basis that the fields are to continue to be used for grazing. **Proposed use of the land** The Land Interest outlined their intended use of the land for development purposes in their initial meetings with the Applicant during the Section 42 Public Consultation Event in October 2022 and in subsequent meetings in November 2022, and presented their concerns relating to the proposed cable route. The Land Interest states that informal planning discussions were undertaken with Arun District Council. However, the Land Interest has not provided any form of file note or notes of the meeting / discussion. In any event, the Land Interest's land is not designated for residential development (within the Local Plan) nor is it a site that has been allocated or called forward as a Strategic Housing Land Availability Assessment (SHLAA) by the local planning authority. The Applicant understands that the land is designated as a Biodiversity Opportunity Area. (Policy ENV DM3 of the Arun District local plan 2011-2031 states that "*within Biodiversity Opportunity*	

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response	Reviewer
	strip for access and maintenance. At a very minimum this removes around 25% of the land in question land from any future development. However in practice it appears likely that the percentage of land affected will be significantly higher and will prevent any of the land in question from being eligible for development. More recently the Trustees have sought to engage with Rampion and its representatives Carter Jonas with a view to establishing if there is a compromise that can be achieved by identifying a viable alternative to the proposed amendment. The Trustees have for example proposed an alternative route that passed through the southern side of the land in question rather than through the middle of the site. This alternative might allow developers to continue to develop part of the site and would involve minimal disruption or additional cost to Rampion. We have sought to compromise and co-operate with Rampion and Carter Jonas and have provided them with information on a number of occasions to facilitate further discussions. However Rampion and Carter Jonas have been unwilling to engage in any meaningful discussion on this topic. Whilst we have provided information whenever feasible, we have requested meetings and asked for replies to our many emails, Carter Jonas in return have been uncooperative as well as slow and vague in their responses. Finally the proposals will create a significant number of additional environmental impacts. In relation to the area including our land at Lyminster, these appear to include, but are not necessarily limited to, "landscape and visual, social economic, air quality, noise and vibration, traffic and historic environment (heritage) effects". In addition other sections of the proposed cable route also appear to create significant negative environmental impacts, including but not necessarily limited to, the removal of ancient woodland and the contamination of groundwater. We also object to the proposals on the basis of the number and range of environmental impact the proposals will have. In conclusion therefore we notify you of our objection to the proposed cable route. If the Planning Inspectorate request any further information, we can provide this separately. We have hard copies of a great deal of information and correspondence relating to the matter of our land covering the past few years. Maria Natale Hacon together with other Trustees Teresa Natale Gina Perella Lewis Teresa Perella Camilleri		*Areas (BOA's) shown on the policies map or where likely to have an impact on the species or habitat within the BOA, any application for planning permission shall be accompanied by a properly conducted survey of presence of the species or habitat and the impacts that development may have on the BOA*". The Applicant is therefore of the view that the alleged development potential for this land (if any) is not substantiated and, is highly speculative. No weight can be placed on these proposals in the balancing of the benefits of the Rampion 2 project against the impact on private rights. Nor in the absence of any option / promotion agreement over the land for its development, do the alleged development prospects have a bearing on the value of the land over which the cable permanent easement is sought. The Applicant has requested the Land Interest share details of the offers received for the sale / development of the land but these have not been provided to date. The Applicant notes however that valuation considerations are not matters for the examination of the draft DCO. **Re-alignment of cable route request** The Applicant confirms that the Land Interest did request whether the cable could be re-aligned along the Southern most boundary of the property. The Applicant has considered whether the cable route could be re-aligned through the Land Interest's land. The cable route could not be moved further South due to further impacts on the Flood Risk Zone 2 and a resulting lengthening of cable route. In addition, any re-alignment through the Land Interest's property would require further re-alignment with the proposed Lyminster bypass (on another landowner's land adjoining the Land Interest's land immediately to the East). The Applicant met with the Land Interest in May 2023 and discussed in detail the concerns raised by the Land Interest. The Applicant followed up this meeting by submitting a letter (dated 23 May 2023) providing reasoning as to why the Land Interest's request to re-align the cable route could not be accommodated. Further information regarding route alternatives have been responded to by the Applicant in **Table 6.4 'Route / Alternatives'**. Environmental and ecological constraints	

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response	Reviewer
			The Applicant's response regarding environmental impact matters provided within this Relevant Representation, including impacts to ancient woodland and groundwater contamination, have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'**. **F**urther information provided regarding Terrestrial Ecology in the **Table 6.3 'Ecology'**.	

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Table LI35 NOT IN USE

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Table LI36 Applicant's Response to Susie Clare Fischel [RR-378]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI36.1	Rampion 2 Offshore Windfarm Project - Application for development consent order ('DCO') REPRESENTATIONS ON BEHALF OF SUSIE CLARE FISCHEL OF [REDACTED] 1st November 2023. Management [REDACTED] extends to 132 acres and is situated in an outstanding location on a gentle south facing slope with open and unspoilt views across to the South Downs in the distance. The owner ceased farming it over 20 years ago, since when she has allowed it to 'rewild'. There has been no agricultural production on the land, and no fertilisers or pesticides have been applied. No farm livestock has been on the land for several years, and the pasture is kept grazed down by wild deer which pass through. Biodiversity As a result of the management regime, the farm is rich in biodiversity. The woodlands, together with the 3 main watercourses passing across the farm, and the many ponds dotted around, provide key source habitats for a variety of wildlife. These are further enhanced by the many wetland areas in the species rich pasture, together with the species rich hedgerows and mature oaks. The farm is effectively run as a nature reserve somewhat unique in the area providing vital habitat to a diverse range of wildlife including many declining or endangered species. Examples of species of note known to be present include great crested newts, bats, orchids, rare water-wort, magnificent mature oaks and rare service trees, while bitterns have also been present in the water meadows in winter. Objections The owner OBJECTS to the scheme on 2 grounds:- 1. ROUTE THROUGH THE FARM AND ITS ENVIRONMENTAL IMPACT Proper consideration has not been given to the suitability of the route (which at over 700 metres is approximately 2 per cent of the entire cable route) and its environmental impact on the farm, including:- • From the outset, the owner has suggested an alternative route exiting the farm further south down the B2135 which would have far less adverse environmental impact, but this has been rebuffed by Rampion 2 on several occasions, despite them not appearing to have fully researched this option. The owner believes such a route would also be easier from an engineering perspective. • Inadequate provision has been made for impacts on protected species, in the routing of the cables and extent of the DCO area, as evidenced by Rampion 2's own environmental surveys which analysed two highly active bat sites on the farm. By way of further example, of 80 ponds tested on the entire route, only 36 tested positive for the presence of great crested newts, and 6 of these are on [REDACTED]. • One of these bat sites is [REDACTED], classified as Ancient Semi Natural Woodland (ASNW). Here the DCO boundary touches the corner of this wood allowing no mitigating buffer even though space is available within the land to alter the alignment of the cable route to keep it a greater distance from this ASNW and despite the owner's requests to do this.	039	**Context** The Applicant has been in regular correspondence with the Land Interest and their agent since February 2021. Feedback on alternative route proposals has been provided to the Land Interest via Formal Letters on 19 July 2022 and 17 October 2023. These are appended to **Appendix 17 Letter to Mr & Mrs Fischel 19.07.22** and **Appendix 18 Letter to Mr & Mrs Fischel 17.10.23**. Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 26 of the **Onshore Works Plans [PEPD-005]**. The Land Interest has pasture land affected by the proposed Rampion 2 cable route (Works No. 9 – Cable installation works (including construction and operational access)); for which a package of Cable Rights and a Cable Restrictive Covenant are sought. The pasture land affected by Works No.9 includes Plots 26/3 and 26/11, as shown blue in the **Land Plans Onshore [PEPD-003]**. There is a proposed temporary construction access (Works No. 13) which runs along the southern boundary of the land holding abutting Spithandle Lane, for which Construction Access Rights are sought. There is a proposed operational access (Works No. 15) on the southern boundary of the land holding, for which the Applicant requires permanent rights packages in order to allow operational access from Spithandle Lane to the cable route. The areas of pasture land on field boundaries affected by Works No.15 include Plots 26/6 and 26/4, as shown blue on the **Land Plans Onshore [PEPD-003]**. In addition, there is a strip of pasture land leading to the proposed cable route which is required for both construction and operational access (Works No. 14) on the southern boundary of their title. The Applicant therefore seeks a package of Construction and Operational Access Rights over this area (Plot 26/5). The Applicant understands the pasture land is used for private nature conservation and is not actively in agricultural use. There are areas of ancient woodland within the land holding, but these will be avoided as per the **Commitments Register [APP-254]**. Any crossing point locations required for land management will be considered as part of accommodation works discussions in due course. **1: Consideration of Alternatives and responses to consultations:** In total, three alternative route proposals have been investigated in respect of this Land Interest, one of which was taken forwards.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	• Inadequate assurance that impacts on the many ancient hedgerows with mature oaks therein will be minimized. 2. LEGAL The owner believes that Rampion 2 is not adequately engaging with landowners to negotiate and agree the necessary legal rights on terms appropriate for both sides, and further that it is content to make minimal effort in this regard, presumably in anticipation of being granted the necessary compulsory powers with which it can dictate terms. Draft legal documentation for the option and easement granting Rampion 2 rights to lay the cables was only received on 26th October 2023. The following points are relevant:- • This was several weeks after submission and acceptance of the DCO application. • At that time, the owner had received no response to earlier concerns raised by her agent regarding the key terms for the option. • The owner also did not feel in a position to respond further to the key terms pending a response to her formal representations on the route which she had submitted to Rampion 2 on 28th November 2022, in respect of Rampion 2's second formal round of consultation. A reply to these representations was only received from Rampion 2's agents nearly a year later on 17th October 2023, again after the DCO Application had been granted. • The issuance of the draft legal documents was only in response to a specific request from the owner. • Whilst there has not as yet been sufficient time to study the documents, Carter Jonas has confirmed that they are 'generic' and identical for each landowner. This suggests that even at this stage there has not been sufficient consideration of owner or property specific constraints or concerns.		A site meeting was initially held in February 2021, followed by subsequent representation letters where the Land Interest expressed concerns about the environmental/ ecological sensitivities of the proposed cable route. The Land Interest's views were also reiterated within further site meetings in May and July 2021 and various consultation responses. Subsequently, the route was amended to take a route further to the east, away from the environmental/ ecological constraints. The new proposed route was initially presented at a meeting in January 2022 and again in April 2022. The rationale for the route amendment and decision-making process was summarised verbally in January and April 2022 and in a letter dated 19 July 2022. The Land Interest proposed an alternative route (in conjunction with neighbouring landowners) at site meetings throughout 2021 and early 2022. This route went to the south of the farm and avoided the Land Interest's title entirely. The letter dated 19 July 2022 provided the rationale for not taking this route forwards. The Land Interest proposed an additional alternative route 'exiting the farm further south down the B2135' which was formally presented to the Applicant in representations in September and November 2022, as a response to the Applicant's proposed re-route on their land. The Land Interest submitted a representation on 28 November 2022, which required detailed engineering and environmental considerations. The Applicant requested a site meeting in June 2023 to discuss the points raised in the consultation response, but the request was declined as the Land Interest invited a written response. The route was fully researched as an option and the rationale and decision-making process for not progressing with the additional route amendment to consultation was communicated formally in a letter dated 17 October 2023. For general project information regarding alternatives the Applicant has provided a summary in **Table 6.4 'Route / Alternatives'** (below). **Ecological Considerations** The letters cited above provide a summary of the ecological impacts identified for each of the Alternatives raised by the Land Interest. In relation to concerns raised regarding the proximity of the red line boundary to Ancient Semi Natural Woodland - It is noted that commitment C-216 of the **Commitments Register [APP-254]** ensures that a 25m stand-off between ancient woodland and any ground works would be implemented. The information provided in the Applicant's response in **Table 6.3 'Ecology'** includes succinct explanations of the measures applied across the project to protect hedgerows, treelines, woodland and protected species. **2: Voluntary Agreement – Engagement and Negotiation**

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			The Applicant has sought to engage in meaningful negotiations with the Land Interest, with details provided below. • On 16 March 2023, Heads of Terms were issued to the Land Interest and their agent. • On 24 April 2023, a group of agents (with clients affected by the project) responded collectively with comments on the Heads of Terms included within an excel table. • On 15 May 2023, an updated spreadsheet with Carter Jonas comments on the issues raised was then circulated by Carter Jonas via email, to the same group of agents for comment. • No further responses were received from the agents specifically relating to the spreadsheet. • On 7 June 2023, Carter Jonas emailed the same group of agents, where it was confirmed that on the basis no response had been received on the issued responded to on 15 May 2023, as set out within the spreadsheet, going forward there would be ongoing dialogue with individual agents in relation to specific landowner queries. • Subsequently, Carter Jonas began discussions with various agents in relation to landowner specific details within the Heads of Terms, but did not receive formal feedback from Mr Robert Crawford-Clake in respect of Mrs Fischel. • On 4 October 2023 Mr Robert Crawford-Clarke responded and requested further information relating to the Heads of Terms and other queries. However, no specific queries were raised in respect of the offer pertaining to this land interest. • On 17 October 2023, Carter Jonas sent a letter to Mr & Mrs Fischel with answers to their various questions about the routing of the cable route. This followed a Letter dated 19 July 2022 which also provided feedback on the routing decisions. • On 23 October 2023, Mr Robert Crawford Clarke confirmed via email that his client would like to work towards signing the Heads of Terms. • On 24 October 2023, the legal documentation relating to the Heads of Terms was sent to Mr Robert Crawford-Clarke. • On 12 December 2023, Carter Jonas chased for feedback on the Heads of Terms documentation. • On 30 January 2024, Carter Jonas requested feedback on the Heads of documentation (via email). • On 6 and 7 February 2024, Carter Jonas had a conversation with Mr Robert Crawford-Clarke at the DCO Hearings and requested specific feedback on the Heads of Terms. • On 16 February 2024, Carter Jonas requested feedback on the Heads of Terms documentation and requested a date for a meeting (via email). • On 27 February 2023. RWE requested feedback on the Heads of Terms documentation and requested a date for a meeting (via email).

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			The Applicant welcomes the opportunity to discuss the Heads of Terms as they specifically relate to this Land Interest. On 16 February 2024 and 28 February 2024 the Applicant emailed the Land Interest's agent requested a meeting to discuss this in further detail.

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Table LI37 Applicant's Response to Alec Lauder [RR-008]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI37.1	I have occupied my property on a seasonal basis since 1996. My family and I have greatly enjoyed the peace and quiet that prevails in the surrounding area as well as the prospect over open fields and I would object to any loss of this valuable amenity. Brookside is unique in the area; it is a small family-owned site with a special character and there is no comparable alternative in this part of West Sussex. I am specifically concerned regarding the proposed temporary access road, pipeline or combination of both on the field directly north of Brookside. The boundary on this side of the site is a hedge and a ditch and this does not provide much screening to the north. According to the plan at present, the proposed access road would be very close to this boundary and this would lead to a loss of privacy as well as giving rise to potential security issues with unknown persons using the access road right by privately owned caravans. My caravan is of lightweight construction and I will suffer considerable noise and disturbance from this proposed development. I understand that the legal operational times of these types of road are 7am to 7pm Monday to Friday and 8am to 1pm on a Saturday – this would be totally disruptive to caravan owners like myself and other holidaymakers who visit the site. I am concerned about the noise every time anything goes over the proposed access road and the dust pollution that it would cause. Your document, Rampion 2 Volume 2, Chapter 22 (22.9.43) states that predicted noise levels would be 85dB at the nearest points (the level here appears to be amongst the highest indicating the proximity and putting predicted noise levels on a par with a diesel truck at 40mph at 50ft (84dB). This would cause significant noise and atmospheric pollution to my caravan. In my view, a more suitable location for an access road could be found further north towards Arundel. However, if the field to the north of Brookside is to be used, then there is a more suitable location for an access road at the far north side of the field where residential house owners have long gardens providing better distance and screening with regard to noise pollution. The A284 is an extremely busy road at certain times of the day, with vehicle queuing, especially when the level crossing gates at Wick (Lyminster crossing), causing huge tailbacks to the north well past the entrance to Brookside. This proposed access road could seriously impact on an already overloaded stretch of road. This will only get worse with the level of road and housing construction in the area for the foreseeable future. If work is to proceed, I would request that it take place during the winter months i.e., October to the end of March in order that disruption and noise can be kept to a minimum. I would also request that restrictions be placed on the times and days that the completed road may be used; I would suggest 8am to 6pm Monday to Friday with no use at weekends.	N/A	The Applicant notes the Interested Party is an occupant of the Brookside Caravan Park on an annual licence agreement basis. The Applicant does not believe the Interested Party has an interest in land. In the unlikely event that they have a sufficient land interest which is capable of being the subject to a Section 10 injurious affection claim for diminution in value of the land interest as a result of the works, they may be able to bring a compensation claim in due course, to be assessed in accordance with the Compulsory Purchase Compensation Code. For the avoidance of doubt, a caravan is an asset and does not represent a compensable interest in land for these purpose. The Applicant notes the issues raised in this relevant representation. All environmental matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.9 'Brookside Caravan Park'** (below). The Applicant acknowledges this request for a change in working hours and has updated the commitments register (C-22) at Examination Deadline 1 to include the use of shoulder hours. This will also be updated and secured in the **Outline Code of Construction Practice (CoCP) [PEPD-033]** at the next submission of this document.

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Table LI38 NOT IN USE

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Table LI39 NOT IN USE

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Table LI40 Applicant's Response to Hugh Miller [RR-150]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI40.1	noise, dust, reduction of air quality, severe congestion on road at Brookside Holiday Park, concerns over wildlife, massive loss of quality of life, devaluation of caravan prices (already happening)concern over the total disruption over this when windpower is not infallible (no wind).	N/A	The Applicant notes the Interested Party is an occupant of the Brookside Carvan Park on an annual licence agreement basis. The Applicant therefore does not believe the Interested Party has an interest in land. In the unlikely event that they have a sufficient land interest which is capable of being the subject to a Section 10 injurious affection claim for diminution in value of the land interest as a result of the works, they may be able to bring a compensation claim in due course, to be assessed in accordance with the Compulsory Purchase Compensation Code. For the avoidance of doubt, a caravan is an asset and does not represent a compensable interest in land for these purposes. The Applicant notes the issues raised in this relevant representation. All environmental matters provided within this Relevant Representations have been responded to by the Applicant in **Table 6.9 'Brookside Caravan Park'**.

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Table LI41 NOT IN USE

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Table LI42 Applicant's Response to James Scott [RR-157]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI42	Although we have received numerous communications from RWE's agents Carter Jonas since July 2020, it is clear that their goal has been to cover the minimum of formalities that the planning process requires. While it is arguable that this has not happened anyway, at no point have we been able to gain any kind of clear indication or assurance about how long we will be impacted by this project if it is approved. In my view, that is why negotiations with the vast majority of the affected landowners are currently stalled.	040	**Context** Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 25 of the **Onshore Works Plans [PEPD-005]**. The Land Interest owns a farmhouse and associated paddocks to the south of Spithandle Lane where he resides. In addition, the Land Interest runs a business and the business premises are located on the farm. The Land Interest is the Managing Director of a Company which owns the Freehold Title of paddock land (Plot 25/6 as shown coloured blue on the **Land Plans Onshore [PEPD-003]**, which is affected by the proposed Cable route (Works No.9 – Cable Installation works (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. The Land Interest also owns the adjacent Land Registry Title (to the west of the proposed cable route) which is owned personally and includes a driveway to their business and residential property. The driveway (Plot 25/9 and 25/8) is included within the Order Limits as a proposed construction and operational access (Works No.14), for which permanent operational and temporary construction access rights are sought. Section 4.6 and 4.7 of the Outline Construction Traffic Management Plan [PEPD-035a] explains this access (A46) will be used for light construction and operational access. There are three paddocks to the east of the land holding (owned by the Company), and the Works No.9 affects all three of them. The two southern paddocks are accessed from the west and therefore will be temporarily severed as a result of the works. The northern paddock is the least impacted by the cable proposals and can be accessed over the proposed construction and operational access. **Engagement and Consultation** The Applicant has been in correspondence with the Land Interest and their agent since February 2021. Three meetings were held between May and August 2021 and the Land Interest attended a Statutory Consultation event in July 2021. In 2021, the Land Interest expressed concerns about the impact on the paddocks, proximity of the proposals to their dwelling and business, and inclusion of an additional Title of theirs within the boundary of the cable corridor, which seemed unnecessary. Subsequently, the route was amended to remove the additional Title, and reduce the total

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			area of the paddocks impacted by the cable route proposals. The new proposals were presented at a site meeting in May 2022, and consulted on in October 2022 as part of the second Statutory Consultation. The Land Interest (in conjunction with neighbouring landowners), put forward an alternative route that would bypass their land to the South, The Applicant provided the rationale for why this route had been discounted at the site visit in May 2022. In June 2021, the Applicant provided answers to some of the Land Interest's queries, which included a question regarding timescales, which the Applicant confirmed would be provided when the project is at a more progressed stage. **Project Timescales** An outline programme with regards to the construction programme is provided in Section 4.7 of **The Proposed Development** **[APP-045].** The final construction programme will be determined during the detailed design phase post-consent. Whilst the outlined timeline for the total construction of the cable route are 3.5-4 years, the actual construction activities on the cable corridor near the Land Interest are expected to be substantially shorter, as the construction of the cable corridor is expected to be undertaken in stages . If the DCO is awarded a detailed construction schedule for the entire cable route will be developed. Indications of time periods for specific activities will be communicated to the Land Interest including: • Clearing and haul road construction; • Trench/duct installation; • Cable installation; • Haul road Re-instatement. Between the haul road construction re-instatement, the haul road on the landowner's property will be used to facilitate similar construction activities further along the cable corridor. The haul road will therefore see periods of increased use but also quiet periods, with little or no construction traffic. These quieter periods may last greater than 12months depending on final schedule. Further information on construction methodologies is presented in the **Outline Construction Method Statement** **[APP-255]**.

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Table LI43 NOT IN USE

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Table LI44 Applicant's Response to (Maria) Teresa Natale [RR-001]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI44.1	I am writing to you as a trustee of land located at Lyminster, West Sussex [Land Registry reference: WSX228882]. This land is directly impacted by the proposed changes to the onshore cable route for the Rampion wind farm and I wish to advise you of my objections. This land has been in our family for several decades. It was originally purchased in the 1960s by my mother Mrs M Natale and her sister in law Mrs A Perella and has subsequently been passed into trust for the benefit of their children. We are a family with this one asset, not a multi-million pound company. I am an individual who is appealing to you directly as to why I object to Rampion 2's application. I will keep to brief facts but I have all relevant documentation to support the points below should you wish me to forward them to you. 1. My parents were ordinary working-class people who worked hard so that their children could have a better life. As part of their plan, they borrowed money from the bank and bought the above land in Lyminster. Although the land has been used for a variety of purposes over the years, the intention has always been ultimately to sell it for development at a suitable point in time. 2. Their wishes began to become reality in 2019 when we were approached by a number of property developers, promoters and agents interested in developing the land. 3. In 2021 the trustees appointed a land agent, Mr W McLaren of McLaren-Clark Consultancy, to market the land for sale/development. This could not have come at a more opportune time due to my personal circumstances. 4. Once Mr McLaren was appointed, we were immediately inundated with interested parties, developers and promoters who had previously contacted us directly as well as new companies. Mr McLaren looked at all the proposals and presented us with a revised list of 10 companies. Following discussions, we interviewed three different companies all of whom, we understand, had contacts or had had informal discussions with Arun District Council and were confident that permission to develop our land would be granted. I am sure that you are aware of the shortfall in the number of houses that have been built in this area and Arun District Council need to provide in the region of 7000 units. The developers were so confident that our site would be a suitable plot that they were prepared to pay the necessary costs for the planning application and all the work involved. 5. We proceeded with our chosen company and we entered into further discussions with them. They made three separate offers, each time increasing the amount they were willing to pay for the land. This did not deter other investors contacting us with continued interest in purchasing our land. We were mindful of the area and surrounding houses and we therefore went with a company that did not offer us the most money but a company that would accommodate the biodiversity area required and be mindful of the amount of houses. 6. As far as the trustees were aware, the proposed Rampion 2 offshore wind farm and associated infrastructure route was outlined in 2021 and did not affect our land. At no point did anyone consult us and the first we heard of the changes was notification of the alternative route received on 14 October 2022 which incorporated our land. 7. We had already embarked on the required surveys of our land for the planning application. For example, in September 2022 we had engaged a company to carry out winter ground water monitoring. Despite asking the company to stop work after receiving notification from rampion 2, equipment had already been put in place and its first months results recorded, hence we still incurred charges. 8. We met with Nigel Abbot (who was	042	**Context** The Land Interest owns pasture land which is affected by the proposed cable route (Plots 4/15, 4/22 & 4/23), works no.9, for which a package of Cable Rights and a Cable Restrictive Covenant are required. The Land Interest also owns a strip of roadside verge which is affected by the proposed temporary construction access (Plots 4/12 & 4/21). Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 4 of the **Onshore Works Plans [PEPD-005]**. The proposed cable route passes through the middle of the Land Interest's land holding, keeping away from residential properties to the North and the Black Ditch (Flood Risk Zone 2) to the South. In addition, an HDD entry / receptor pit for a trenchless crossing of Lyminster Road (A284) is proposed in Plot 4/22. The Land holding has principally been used for grazing and is split into a number of small paddocks. The location of the cable route would result in further splitting of the fields for the construction period. Appropriate fencing of the cable route will be used and appropriate crossing points installed on the basis the fields are to continue to be used for grazing. **Consultation and Engagement** The original proposed cable route outlined in the Applicant's Statutory Public Consultation (July to September 2021) did not directly impact on the Land Interest as the proposed cable route was to the West of Lyminster Road / Lyminster with a proposed crossing point just to the south of the Crossbush / A27 Junction. Therefore, there would have been no requirement for the Applicant to directly consult with the Land Interest at this time. The Land Interest changed their ownership details in December 2021 into the names of the Trustees of the Land at Lyminster Trust. The Applicant wrote to the Land Interest (the formerly registered proprietors) in March, April and June 2022 and hand delivered a letter to the formerly registered proprietors address in June 2022 seeking to engage with the Land Interest. Due to the time delay in the Land Registry updating their website, the Applicant only became aware of the change of ownership details in October 2022 whereupon a letter was issued to the Land Interest in advance of the October 2022 Section 42 Public Consultation Event. **Proposed use of the land** The Land Interest outlined their intended use of the land for development purposes in their initial meetings with the Applicant during the Section 42 Public Consultation Event in October 2022 and in subsequent meetings in November 2022, and

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	representing Rampion). We explained our situation vis-a-vis the building situation (something they would have discovered if they had entered into discussion with the landowners as individuals with individual needs rather than treating us as a number and putting a line through our land to suit their purpose). Mr Abbot seemed to be sympathetic and 'persuaded' me, despite my reservations, to sign a document giving permission for Rampion to have access to our land. We were told that if we showed willingness to work with Rampion, he could see no reason why Rampion would not work with us and position the pipes to minimise impacting the development of the majority of our land. The alternative was to refuse to sign the SAL at which point Rampion would have statutory power to gain access over our land for a period of 12 months!!! 9. Despite signing and showing willingness to compromise, it was not reciprocated by Rampion.. As trustees, we have subsequently tried to further engage with Rampion and its representatives Carter Jonas to try and establish a compromise that can be achieved by identifying a viable alternative route that passes through the southern side of the land in question rather than through the middle of the site. This would allow us to continue to develop part of our land and would involve minimal disruption or additional cost to Rampion. Furthermore, we have learnt that one of the other landowners has actually proposed an alternative route which would avoid digging up good farming land in exchange for a piece of grazing land. This would avoid our land altogether. However, Rampion have been unwilling to engage in any meaningful discussion on any of our suggestions. 10. Cost seems to be the main reason behind much of their thinking. For a small landowner with a lot of personal, financial and health issues, which I am unable to elaborate on, it is hard to see any reason why a mullti-million pound company is being allowed to treat us this way, leaving us to fight for what little we have, for their own benefit. And to find out that one of their representatives was able to cash in some of their Rampion shares to purchase a £3,000,000 property is hard to take. I ask you to please look at us as individuals and not numbers. Our site is not a piece of grazing land but a site close to development. Thank you.		presented their concerns relating to the proposed cable route. The Land Interest requested whether the cable could be re-aligned along the Southern most boundary of the property. The Applicant requested the Land Interest to share details of offers received for the sale / development of the land. The Land Interest states that informal planning discussions were undertaken with Arun District Council. However, the Land Interest has not provided any form of file note or notes of the meeting / discussion. In any event, the Land Interest's land is not designated for residential development (within the Local Plan) nor is it a site that has been allocated or called forward as a Strategic Housing Land Availability Assessment (SHLAA) by the local planning authority. . The Applicant understands that the land is designated as a Biodiversity Opportunity Area. (Policy ENV DM3 of the Arun District local plan 2011-2031 states that "within Biodiversity Opportunity Areas (BOA's) shown on the policies map or where likely to have an impact on the species or habitat within the BOA, any application for planning permission shall be accompanied by a properly conducted survey of presence of the species or habitat and the impacts that development may have on the BOA". The Applicant is therefore of the view that the alleged development potential for this land (if any) is not substantiated, is highly speculative and at best could only ever be in the longer-term, well after the construction of the Rampion 2 scheme. No weight can be placed on these proposals in the balancing of the benefits of the Rampion 2 project against the impact on private rights. Nor in the absence of any option / promotion agreement over the land for its development, do the alleged development prospects have a bearing on the value of the land over which the cable permanent easement is sought. The Applicant has requested the Land Interest to share details of the offers received for the sale / development of the land but these have not been provided to date. The Applicant notes however that valuation considerations are not matters for the examination of the draft DCO. **Re-alignment of cable route request** The Applicant confirms that the Land Interest did request whether the cable could be re-aligned along the Southern most boundary of the property. The Applicant considered whether the cable route could be re-aligned through the Land Interest's land. The cable route could not be moved further South due to further impacts on the Flood Risk Zone 2 and could not be moved further North due to the proximity to residential properties. In addition, any re-alignment through the Land Interest's property would require further re-alignment with the proposed Lyminster bypass (on another landowner's land adjoining the Land Interest's land immediately to the East).

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			The Applicant met with the Land Interest in May 2023 and discussed in detail the concerns raised by the Land Interest. The Applicant followed up this meeting by submitting a letter (dated 23 May 2023) providing reasoning as to why the Land Interest's request to re-align the cable route could not be accommodated. Further information on cable route alternatives and sifting matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.4 'Route / Alternatives'**. **Survey Access** Whilst the Land Interest did agree to enter into a non-intrusive Survey Access Licence agreement, and a fee was paid, survey access was denied. The Applicant did not choose to implement any statutory powers to undertake these surveys.

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Table LI45 Applicant's Response to Charles Roderick Worsley [RR-059]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI45.1	Representation from Charles Worsley in response to issuance of a letter under Section 56 of the Planning Act 2008 on behalf of Rampion 2 Offshore Wind Farm (The "Proposed Development") I, Charles Worsley, as owner and farmer of land parcels reference 34/18, 34/19/ 34/20, 34/21, 34/22 and 34/23 make the following comments on the DCO application: 1.?The Applicant has requested New Rights or the Imposition of Restrictive Covenants on all the above listed land parcels. 2.?It is understood that a pair of underground cables at 400Kv are required to connect the new substation at Oakenden and the existing Bolney National Grid Substation. 3.?It is understood the cables would require a 15m wide easement, a construction strip of up to 40m wide. 4.?It is therefore unclear why the DCO consent order boundary (shown as a red line in the attached plan) has been drawn at between 100m up to 125m wide. 5.?The excessively wide DCO consent boundary will adversely impact my current ability to farm and access the land, and will cause unnecessary environmental impact. I would request that it is reduced to no more than 40m wide at its widest point. (see Revised Red Line Plan attached). 6.?The cable route should be defined at an early stage in the DCO process so as to avoid the mature boundary trees classified in the Arboricultural Constraints Plan as High Quality Category A trees. The Plan suggests under "Principles to minimise harm" that cable construction corridors can be reduced to 30m and as little as 14m to reduce the harm caused to trees and hedges, this should be the strategy used at this crossing. Under no circumstances should there be a need to remove any of this group of trees (Ref: G248) as is shown on the Arboricultural Impact Plan, Annex B. 7.?South of the group of High Quality trees (Ref: G248) there are two ash trees that unfortunately will require removal due to Ash Dieback disease. They are adjacent to the existing boundary tree and hedge gap, which was created for the construction access for Rampion 1 wind farm substation, this would be the least environmentally damaging crossing point for the proposed new cables (see Blue Line on Plan attached). 8. These points have been made direct to the Applicant at numerous me BEFORE the DCO application was finalised but have not as yet been acted upon. (Plan will not attach here, copy to follow by email)	043	**Context** The Land Interest owns pasture land which is affected by the proposed cable route (Plots 34/18, 34/19, 34/20, 34/21, 34/22 & 34/23). Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 34 on the **Onshore Works Plans [PEPD-005]**. The land is located north of, but in proximity to, the Bolney NGET substation. The Applicant requires the land for its Onshore Connection Works (Works no. 19) and seeks a package of permanent rights (Cable Rights) in relation to this land to enable the construction, retention, operation, maintenance and decommissioning of the underground cable connection, together with a restrictive covenant (Cable Restrictive Covenant) to protect the apparatus. The Applicant understands that the land is currently not farmed for arable or grazing purposes but is subject to low level vegetation management. Part of the land in the southern part of the landholding was used for the construction of the Rampion 1 substation. **Order Limits** As explained in paragraphs 6.9.42-6.9.44 of the **Statement of Reasons [PEPD-012]** the standard trenched cable construction corridor is 40m wide, with an expected 20m permanent easement. In this specific location rights for a 30m construction corridor are anticipated to be required due to the reduced number of cable circuits from 4 to 2 between the permanent onshore substation at Oakendene to the Bolney Substation Extension. The reduction in cable circuits has a resulting reduction in land requirement to 30m cable construction corridor width. The Applicant's Order Limits have been widened at this location to allow for flexibility in the final design of the cable route to ensure a route is feasible in the context of the final design of the connection to the Bolney Substation (see below under **NGET Grid Connection Agreement and Design work**) and to avoid environmental constraints and existing services. **Consultation and Engagement** The Applicant has been engaging in relation to the land with the landowner, who was first consulted by the Applicant about the Proposed Development by letter dated 20th November 2020. The Land Interest was subsequently consulted on the Proposed Development in January/ February 2021 and again in July 2021

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The Land Interest informed the Applicant of a potential solar array or battery storage scheme in an on-site meeting with the Applicant on 14 May 2021. Further details on the potential third party battery storage development on the land is set out in the response to Relevant Representation (please refer to the Applicant's response in **Table LI15** (above)).

Ancleggan Limited, which is the entity with the legal interest entered into the Option Agreement with the landowner in respect of the "Ancleggan Land". In this respect the Applicant notes that Ancleggan concluded the Option Agreement with the landowner on 17 December 2021, some time after the Proposed Development was first consulted upon and after the Applicant had identified Bolney NGET substation as its grid connection point. The landowner and Ancleggan Limited were therefore aware of the Proposed Development at the time of entering into the Option Agreement;

Details of discussions between the Applicant and Ancleggan Limited are set out in the response to the relevant representation response to Ancleggan.

Consideration of Alternatives

The Applicant identified Bolney NGET substation as the final connection point for Rampion 2 prior to 2019 when the NGET grid connection application was submitted by the Applicant to NGET . Whilst Oakendene was chosen for the main substation building, the final connection to Bolney NGET is required to connect to the National grid network.

The non-statutory consultation (January 2021) included the provision of a "Cable Options" plan 42285-WOOD-CO-ON-FG-0001 which showed a cable route option running through the Land Interest's land, to the north east of Bolney substation. The Plan also showed the land owned by Mr Worlsey as being within a "substation area of search" (Wineham Lane North), along with 2 other potential substation locations. This plan was included in the "virtual exhibition" which was uploaded onto the Rampion 2 website in January 2021 (see **Appendix 11 Rampion 2 Virtual Exhibition 15.01.21**). Further to this consultation, the works plans were refined to include land required for the onshore cable connection within the PEIR boundary shown on the PEIR location plans which formed part of the first Statutory Consultation from July 2021. Consultation responses were taken into account alongside environmental and engineering work and a decision to proceed with the Oakendene substation was made in July 2022.

The Applicant substantially reduced the extent of the Land Interest's land proposed to be utilised for the Proposed Development following its decision to proceed with the Oakendene substation and not proceed with the potential Wineham Lane north site. This resulted in the exclusion of the eastern part of the land interest's land from the Proposed DCO Order Limits which was in turn consulted upon in the second Statutory Consultation in October 2022. The Land Interest objected to the inclusion of the land which was by that time subject to an option agreement with Ancleggan Limited due to the proposed Ancleggan Limited Battery Storage scheme also requiring use of the land for a substation and batteries.

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Further information regarding the Oakendene Substation alternatives have been addressed in Table 6.20 ‘Design and siting of the onshore substation at Oakendene’ below and further information is available in Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (**Document reference 8.25**) submitted at Deadline 1.

Constraints

Since first contact with the Land Interest, The Applicant has provided information on project requirements, project updates and explanations of constraints. Through these meetings and exchanges, the Applicant received buried services survey information from the Land Interest in 2023 and the Applicant has also shared its survey data of buried services on NGET land adjacent to Ancleggan land with Ancleggan Limited representatives (see relevant representation response – Ancleggan).. This information has been collated with other constraints and features onto a ‘constraints and features plan’, which is being prepared to accompany an memorandum of understanding (MOU) with One Planet on behalf of Ancleggan Ltd.

The current constraints and features on and in the vicinity of the Ancleggan land comprise of:

- Flood risk areas to the north and west of the Ancleggan land
- Ancient woodland to the north west of the Ancleggan land and to the south of Bolney NGET substation
- Category A Trees and associated route protection areas immediately west of the Ancleggan land
- The existing Bolney NGET substation
- Buried services owned by NGET, UKPN and other utilities running east-west to the south of the Ancleggan land and through the Ancleggan land
- Land to the south of Bolney NGET substation is subject to UKPN land interests and accommodates UKPN equipment and services infrastructure. There is also a watercourse to the south.

The Order Limits and land rights required the Proposed Development in this location have been arrived at taking into account the above constraints; the requirement for the underground onshore connection works (work no 19); and the required extension to the NGET Bolney substation extension (work no. 20) which isto be designed by NGET as part of the grid connection agreement with Rampion 2.

The Applicant has also had regard to:

- the potential Ancleggan development - planning permission has yet to be obtained for this scheme and the proposed grid connection is 2031, 5 years later than that for Rampion 2; and–
- an early pre- application stage grid stability scheme to the west of the ‘Ancleggan Land’ and north of Bolney substation within the Order Limits

NGET Grid Connection Agreement and Design work

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NGET's role as statutory undertaker is to provide a grid connection for the Proposed Development pursuant to a grid connection offer request. It is also the owner of the land required for the connection. A grid offer and associated documents were issued in 2019. As part of the connection offer, NGET has responsibility to provide a design for the project connection which NGET has confirmed is to comprise of 2 connection bays to the east of Bolney substation. Please see the **Cable and Grid Connection Statement [APP-034]**.

It is common for a developer to secure a grid connection offer or agreement in advance of securing planning consent as the Applicant has done. It also usual for the grid company to carry out the design work at what it considers to be the appropriate phase/ time as part of the agreement. Details of the grid connection had not been provided by NGET by the latter stages of EIA in early 2023 despite the grid offer being signed in 2019. Therefore, based on the Applicant's own existing assessments of EIA sensitivities, utilities mapping and construction constraints, the Applicant proposed a location for siting of the Rampion 2 connection bays and associated equipment . This outline location and footprint for the Rampion 2 bays and associated infrastructure is shown on the Rampion 2 Onshore Works Plan [PEPD-005] Sheet 34 as Work no. 20 and is to the East of Bolney NGET substation – the Bolney NGET extension. The details of the grid connection have been awaited by the Applicant since 2019 and further to a series of meetings it has now been confirmed by NGET that the connection location will be in the location identified by the Applicant. The NGET Bolney extension design is expected to be received from NGET in March 2024 in accordance with their report at the last meeting on 25th January 2024.

The Bolney extension design by NGET will have a direct influence on the final cable routeing north and east of the extension equipment. The NGET Bolney extension design will dictate the location of the Rampion 2 cable in the Ancleggan land alongside the known environmental and buried services constraints and future unknown environmental constraints that may need to be dealt with at the construction stage (for example protected species mitigation requirements).

At this stage, the Applicant is not able to confirm whether it will be possible to avoid the removal of trees forming G248, but minimising the removal of mature and high-quality trees across the Proposed Development is a principal consideration that will be explored further at the detailed design stage. Where tree removal is unavoidable, a proportionate level of replacement planting will be provided in accordance with the calculation rates presented in **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]** and secured by Commitment C-286, detailed in the **Commitments Register [APP-254]**. **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** presents the Landscape and Visual Assessment for the project, including Section 18.9 for assessment of effects on Oakendene Substation and Section 18.10 for the assessment of effects on the Existinng National Grid Bolney substation extension. As described in the **Chapter 5: Approach to the Environmental Impact Assessment, Volume 2** of the ES **[APP-046]** the environmental assessments have been based on the maximum design scenario, which represents the worst case scenario for each aspect. Further to the identification of the final onshore cable connection works, appropriate crossing points will be discussed with the Land Interest for land management purposes.

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Table LI46 Applicant's Response to Linsey Miller [RR-201]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI46.1	I have already written a strong objection to you about the access road through the beautiful field beside our caravan site. Our caravan, no 82 backs straight onto the field. Our bedroom will be closest to the construction works. I cannot believe you are still going ahead with this work despite all the objections. Lyminster Road is already prone to traffic holdups and your proposal will cause long delays and the resulting pollution. Your works seem to be aimed at causing maximum distress as there are 120 caravan owners who will be affected by the noise and pollution from your work plus the houses on the other side of the field. My family have been using Brookside since the early 1980s. We come for peace, quiet and relaxation. Your proposed works will ruin that for us. Our caravans will become unsaleable and this will destroy a long standing business for the Renny family, site owners for sixty years. I have severe asthma and the dust and the pollution will adversely affect my health. Our main address is by a busy road and we come to Lyminster for free air and quality of life, something that will be destroyed by your project. Why don't you build your access road nearer Crossbush? Very few people would be disturbed, if any. Wind farms are about conserving the planet, but your project will destroy the habitat for the abundant wildlife in the area that we enjoy so much! This can only be about money and profit for your company, because you have made no effort to compensate people for the destruction of their lifestyle. Please think about moving this road nearer Crossbush Roundabout.	N/A	The Applicant notes the Interested Party is an occupant of the Brookside Caravan Park on an annual licence basis. The Applicant therefore does not believe the Interested Party has an interest in land. In the unlikely event that they have a sufficient land interest which is capable of being the subject to a Section 10 injurious affection claim for diminution in value of the land interest as a result of the works, they may be able to bring a compensation claim in due course, to be assessed in accordance with the Compulsory Purchase Compensation Code. For the avoidance of doubt, a caravan is an asset and does not represent a compensable interest in land for these purposes. The Applicant notes the issues raised in this relevant representation. All environmental matters provided within this Relevant Representations have been responded to by the Applicant in **Table 6.9 'Brookside Caravan Park'** (below). The proposed routing strategy is further detailed in the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]**. The CTMP would be secured by Requirement 24 of the **Draft Development Consent Order (DCO) [PEPD-009]**. The closest construction access junction to Brookside Caravan Park on the western side of the A284 is A-12 located approximately 60m north of the Caravan Park boundary as shown on Sheet 7 of the **Access, Rights of Way and Street Plans [APP-012]**. For clarity, access A-11 located immediately north of the Caravan Park boundary is for operational purposes only as shown on the **Onshore Works Plans** sheet 5 **[PEPD-005]**. Operational access requirements will be minimal with scheduled maintenance of the onshore cable route required every 2-5 years generating approximately three LGVs for one day. Some unscheduled or emergency repair visits may also be required but this also typically involve a very small number of LGVs. As detailed in Table 5-3 and 6-2 of the **Outline CTMP [PEPD-035a]**, A-12 is a construction access which will generate 878 HGV two-way movements and 456 LGV two-way movements across the whole four-year construction programme. This compares to a daily HGV flow on the A284 of approximately 700 vehicles. At peak construction the Proposed Development will generate 234 HGV two-way movements, which is approximately 47 HGVs per day (assuming 5-day week) or one every 14 minutes (assuming a 12-hour working day). The peak in LGVs is 60 LGV two-way movements in a week, which is 12 a day, and 1 per hour. A-13 is an operational and construction access. As detailed in Table 5-3 and 6-2 of the **Outline CTMP [PEPD-035a]** at access A-13 there will be up to 562 HGV two-way movements and 480 LGV two-way movements. If access A-13 is used for all construction traffic movement over A-15 during the peak week of construction activity, there will be 130 HGV two-way movements and 96 LGV two-way movements. This is the equivalent to 26 HGV two-way movements per day or 2-3 per hour and 19 LGV movements per day and 1-2 per hour. However, it is noted that there is optionality at

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			this location for the contractor to use either Access A-13 or A-15 (north of Lyminster) or a combination of both. Given that access A-15 provides access directly from Lyminster bypass and adheres to Commitment C-157 to avoid routing HGV traffic through smaller settlements (**Commitments register** **[APP-254]** and secured through requirement 24 of the **Draft DCO** **[PEPD-009]**) it is considered that use of Access A-13 is unlikely by the contractor. The closest receptor to the Caravan Park identified within the **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES (Document reference 6.2.32) is Lyminster village (receptor 7), located 250m north of the Caravan Park access, because of residents living in properties adjacent to the highway and pedestrian traveling along the A284. Whilst the Caravan Park itself was not identified as a sensitive receptor itself, it will experience the same impacts as those identified for Lyminster. Table 23-37 of **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** identified a worst-case increase in HGV traffic of 7.1% during construction of the and therefore concluded that the proposed development would not generate any significant environmental effects on the A284. This level of impact is also identified within the sensitivity test which will be used within **Chapter 32: ES Addendum, Volume 2** of the ES (**Document reference 6.2.32**). As such the Proposed Development will not generate any significant environmental effects in relation to traffic at this location.

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Table LI47 Applicant's Response to Lynette Regan [RR-210]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI47.1	We live in Australia and look forward most years to the time when we can visit again and enjoy our quiet retreat on the edge of the beautiful English countryside. Not the parched countryside and endless dust storms and bush fires that we live in, here in Queensland, but pleasant green countryside of England. We also take much pleasure in watching the birds that live in the hedges, listening to their songs, and especially at nesting times feeding their chicks. They will lose their homes and probably their lives. Where else are these poor creatures supposed to go, there isn't anywhere else. Hedgehogs, (already critically endangered) can often be spotted along this hedge and ditch, water voles, in the marshy area, along with the numerous rabbits and the occasional fox. The hedgehogs in particular would be wiped out by the heavy trucks that are going to frequent this road.	N/A	The Interested Party does not identify where their caravan or holiday home is. In the circumstances, the Applicant reserves its position to comment further on the matters raised in the relevant representation In the event that the caravan / holiday home is situated at Brookside Caravan Park, which is the assumption that the Applicant has made for the purposes of the remainder of this response, all environmental matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.9 'Brookside Caravan Park'**. Further information regarding Terrestrial ecology and nature conservation matters are provided in the **Table 6.3 'Ecology**. The approach to construction described in the **Outline Code of Construction Practice (CoCP) [PEPD-033]** and habitat reinstatement described in the **Outline Landscape and Ecology Management Plan (LEMP) [APP-232]** focuses on firstly avoiding, then minimising and mitigating potential effects on individual species. This is both to minimise the level of impact and to ensure compliance with relevant legislation and best practice. Around Brookside Caravan Park there is limited (6m) temporary loss of hedgerow along the A284 and two wet ditch crossings (tributaries of the Black Ditch) to the west of the A284 and north of the railway line. The remainder of habitat loss in this area will be coastal and floodplain grazing marsh (west of the caravan park) and arable field (north of the caravan park).
LI47.2	Not to mention the dust. Living here in Australia, dust is something we know lots about. We can well imagine how much dust these trucks are going to produce given even a very short dry spell. It will only take a day or two for the ground to dry enough to create a significant dust cloud with each passing vehicle. Dust in chocking, it sticks in the throat and produces endless coughing, it can suffocate vegetation too. For people such as my partner, others who use the park, or live in the adjacent area, already suffering from serious lung problems or diseases, this will be devastating. He so looks forward to our time at the park in what is usually an almost dust free environment, and comparatively quiet too as we are far removed from the road and passing traffic.		The Applicant notes the issues raised in this relevant representation. Matters relating to construction practices and project commitments are raised within this Relevant Representation have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'**, with further information regarding dust and Air Quality provided in **Table 6.10 'Pollution'**.
LI47.3	The noise and light pollution doesn't bear thinking about. Trucks roaring back and forth at all hours of the day and night. This park is a retreat for many people from the city and they are at the park for some serious R and R (rest and recreation) not to be disturbed by 'bloody' great trucks thundering back and forth continuously, their lights sweeping across the park at all hours, this is very disruptive for sleep. The park guests, like ourselves are usually in the park all day, we are all on holiday, not going out to work during the daytime so there all day to enjoy the quiet atmosphere. Noise, and disrupted sleep can have a serious impact on peoples' mental health and this is even more important than ever as this aspect of peoples lives has been already seriously impacted with the COVID 19 pandemic and the ensuing lockdowns that we've all experienced all around the world. Mental health is a serious consideration:		The Applicant notes the issues raised in this relevant representation. All environmental matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.9 'Brookside Caravan Park'**. The Applicant acknowledges this request for a change in working hours and has updated C-22 of the **Commitments Register [APP-254]** to include the use of shoulder hours. This will also be updated and secured in the **Outline Code of Construction Practice (CoCP) [PEPD-033]** at the next submission of this document.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI47.4	Our holiday vans are constructed of quite light materials and we expect that the continuous vibrations the trucks will create will have a significant effect on all our vans. It will shake them apart in a very short space of time we expect. This will not only affect the owners of the individual vans but the owners of the park. If peoples' vans are damaged then many people are not going to replace them, but just leave them, or try and sell, a very doubtful proposition, and leave the park permanently. This will have a devastating impact on the business which has been going for many many years and where so many people have had so much pleasure.		The Applicant notes the issues raised in this relevant representation. All environmental matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6.9 'Brookside Caravan Park'**, with further information provided in the **Table 6.1 'Traffic'**.
LI47.5	Please consider moving this road to a more suitable and less intrusive location, we're sure one could readily be found, making life easier for all concerned.		As part of the optioneering work that was completed on the project, alternative construction access options to the cable corridor near Brookside Caravan Park were considered. Within the Application, the Applicant has put forward the best possible option that meets the project's requirements. **Alternative Routing Considered for construction access A-12** Alternative routing from the A284 north of Lyminster would have had to cross sensitive ecological habitats and wetlands over a significantly longer distance. Routing construction traffic through Lyminster would not have been possible due to narrow streets through the village. The railway line to the south and to the west further limited potential access routes. Due to this, the selection of the option via construction access A-12 was made.

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Table LI48 Applicant's Response to Maria Teresa Camilleri [RR-216]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI48.1	I, Teresa Camilleri am one of the four Trustees of land located at Lyminster, West Sussex (Land Registry Ref: WSX228882). This land is directly impacted by the proposed changes to the onshore cable route for the Rampion 2 Wind Farm and I wish to advise you of our objection to the latest proposals. This land has been in our family for several decades, it was originally purchased in the 1960s by our mothers and has subsequently been passed into Trust for the benefit of their children. As the intention has always been ultimately to sell it for development at a suitable point in time. From 2019 to 2021 we as landowners were approached by a number of property developers, promoters and agents interested in developing our land. We met with several of these parties in early 2021 and subsequently appointed a land agent, Mr W McLaren of McLaren-Clark Consultancy, to market the land for sale/development. The following year we amended the Trustee structure from the two original Trustees to the current structure of four Trustees in order to facilitate the potential sale. This process was time consuming and the Trustees incurred considerable expense to carry out the process. On behalf of the Trustees, Mr McLaren sought expressions of interest from a number of developers and promoters and this was further refined to a list of the parties with whom we wished to progress matters. After further face to face meetings with the strongest bids - who informed us that they had informal discussions with Arun District Council concerning the suitability of the land for development and were confident planning permission would be granted - the Trustees together with McLaren agreed on a particular developer. It was also specified at the time that our land was particularly favourable for development because of the proposed Bypass which would in turn benefit the local community, the construction of which is currently well under way. This particular developer then made three separate offers within a short space of time, each of which took into account provision for biodiversity and affordable housing, and increased in terms of number of units to be built and the quantum that would be paid for the land. This quantum represents a life changing amount of money for the Trustees. However following notification from Rampion of the proposed revision to the cable route which now runs directly through our land, the developer terminated the negotiations and unsurprisingly, due to Rampion's impositions there has been no further interest from any other parties. The Trustees also incurred significant additional expenditure as part of the process of preparing the land for sale. For example we engaged with a company to undertake physical surveys including winter ground water monitoring. On receipt of notification from Rampion of its revised proposals on 14 October 2022 we had no choice but to ask that this work be halted. However we were charged a considerable amount for costs already incurred by the company in question. The consultation document notes that "land affected by installation works would be fully restored back to its former condition once complete, other than occasional access covers for maintenance". However this does not accurately reflect the impact of the revised cable route on the land in question. The subsequent need for access means that it will not be possible to develop the affected land and effectively eliminates it from development at any point in the future and substantially reduces its future value. The proposals require an initial 50 metre wide working corridor for installation of the	044	**Context** The Land Interest owns pasture land which is affected by the proposed cable route (Plots 4/15, 4/22 & 4/23), works no.9, for which a package of Cable Rights and a Cable Restrictive Covenant are required. The Land Interest also owns a strip of roadside verge which is affected by the proposed temporary construction access (Plots 4/12 & 4/21). Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 4 of the **Onshore Works Plans [PEPD-005]**. The proposed cable route passes through the middle of the Land Interest's land holding, keeping away from residential properties to the North and the Black Ditch (Flood Risk Zone 2) to the South. In addition, an HDD entry / receptor pit for a trenchless crossing of Lyminster Road (A284) is proposed in Plot 4/22. The Land holding has principally been used for grazing and is split into a number of small paddocks. The location of the cable route would result in further splitting of fields for the construction period. Appropriate fencing of the cable route will be used and appropriate crossing points installed on the basis that the fields are to continue to be used for grazing. **Proposed use of the land** The Land Interest outlined their intended use of the land for development purposes in their initial meetings with the Applicant during the second Statutory Consultation Event in October 2022 and in subsequent meetings in November 2022, and presented their concerns relating to the proposed cable route. The Land Interest states that informal planning discussions were undertaken with Arun District Council. However, the Land Interest has not provided any form of file note or notes of the meeting / discussion. In any event, the Land Interest's land is not designated for residential development (within the Local Plan) nor is it a site that has been allocated or called forward as a Strategic Housing Land Availability Assessment (SHLAA) by the local planning authority. The Applicant understands that the land is designated as a Biodiversity Opportunity Area. (Policy ENV DM3 of the Arun District local plan 2011-2031 states that "*within Biodiversity Opportunity Areas (BOA's) shown on the policies map or where likely to have an impact on the species or habitat within the BOA, any application for planning permission shall be accompanied by a properly conducted survey of presence of the species or habitat and the impacts that development may have on the BOA*". The Applicant is therefore of the view that the alleged development potential for this land (if any) is not substantiated, is highly speculative. No weight can be placed on these proposals in the balancing of the benefits of the Rampion 2 project against the impact on private rights.

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	cable and thereafter a 20 metre wide strip for access and maintenance. At a very minimum this removes around 25% of the land in question land from any future development. However in practice it appears likely that the percentage of land affected will be significantly higher and will prevent any of the land in question from being eligible for development. More recently the Trustees have sought to engage with Rampion and its representatives Carter Jonas with a view to establishing if there is a compromise that can be achieved by identifying a viable alternative to the proposed amendment. The Trustees have for example proposed an alternative route that passed through the southern side of the land in question rather than through the middle of the site. This alternative might allow developers to continue to develop part of the site and would involve minimal disruption or additional cost to Rampion. We have sought to compromise and co-operate with Rampion and Carter Jonas and have provided them with information on a number of occasions to facilitate further discussions. However Rampion and Carter Jonas have been unwilling to engage in any meaningful discussion on this topic. Whilst we have provided information whenever feasible, we have requested meetings and asked for replies to our many emails, Carter Jonas in return have been uncooperative as well as slow and vague in their responses. Finally the proposals will create a significant number of additional environmental impacts. In relation to the area including our land at Lyminster, these appear to include, but are not necessarily limited to, "landscape and visual, social economic, air quality, noise and vibration, traffic and historic environment (heritage) effects". In addition other sections of the proposed cable route also appear to create significant negative environmental impacts, including but not necessarily limited to, the removal of ancient woodland and the contamination of groundwater. We also object to the proposals on the basis of the number and range of environmental impact the proposals will have. In conclusion therefore we notify you of our objection to the proposed cable route. If the Planning Inspectorate request any further information, we can provide this separately.		The Applicant is therefore of the view that the alleged development potential for this land (if any) is not substantiated, is highly speculative and at best could only ever be in the longer-term, well after the construction of the Rampion 2 scheme. No weight can be placed on these proposals in the balancing of the benefits of the Rampion 2 project against the impact on private rights. Nor in the absence of any option / promotion agreement over the land for its development, do the alleged development prospects have a bearing on the value of the land over which the cable permanent easement is sought. The Applicant has requested the Land Interest to share details of the offers received for the sale / development of the land but these have not been provided to date. The Applicant notes however that valuation considerations are not matters for the examination of the draft DCO. **Re-alignment of cable route request** The Applicant confirms that the Land Interest did request whether the cable could be re-aligned along the Southern most boundary of the property. The Applicant has considered whether the cable route could be re-aligned through the Land Interest's land. The cable route could not be moved further South due to further impacts on the Flood Risk Zone 2 and could not be moved further North due to the proximity to residential properties. In addition, any re-alignment through the Land Interest's property would require further re-alignment with the proposed Lyminster bypass (on another landowner's land adjoining the Land Interest's land immediately to the East). The Applicant met with the Land Interest in May 2023 and discussed in detail the concerns raised by the Land Interest. The Applicant followed up this meeting by submitting a letter (dated 23 May 2023) providing reasoning as to why the Land Interest's request to re-align the cable route could not be accommodated. Further information regarding route alternatives have been provided in **Table 6.4 'Route / Alternatives'** below**.** **Environmental and ecological constraints** The Applicant's response regarding environmental impact matters provided within this Relevant Representation, including impacts to ancient woodland and groundwater contamination, have been responded to by the Applicant in **Table 6.2 'Environment and disturbance'**. Further information provided regarding Terrestrial Ecology in the **Table 6.3 'Ecology'** (below).

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Table LI49 Applicant's Response to The National Trust [RR-390]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI49.1	The charitable purpose of the National Trust is set out in statute. Specifically, section 4(1) of the National Trust Act 1907 establishes the National Trust "for the purposes of promoting the permanent preservation for the benefit of the nation of lands and tenements (including buildings) of beauty or historic interest and as regards land for the preservation (so far as practicable) of their natural aspect features and animal and plant life." There are two key statutory mechanisms that make it possible for the National Trust to fulfil this purpose. The first is the ability to declare land "inalienable" meaning that it is held in perpetuity for the benefit of the nation and cannot be voluntarily sold or mortgaged. The second is the ability to restrict uses of land outside of National Trust ownership, even when the National Trust does not own benefiting land adjacent to the burdened land (section 8 the National Trust Act 1937). Issue 1 – Land At Washington. The National Trust owns inalienable land at Washington affected by the proposed route of the onshore cables. This land was declared inalienable on 14th October 1942 and is affected under Works Plans 9, 13, & 15 - Sheets 21 & 22. The Trust has been working with the Applicant to negotiate appropriate easement terms that balance both parties' interests. Pending resolution of those negotiations the Trust objects to the compulsory acquisition of rights over inalienable land at Washington. Issue 2 – Cable Landfall at Climping. The National Trust is the beneficiary of an extensive Section 8 covenant which covers approximately 375 hectares of land between Littlehampton and Middleton-on-Sea in West Sussex. This "Normanby Covenant" was entered into between the National Trust and the Marchioness of Normanby on 10 December 1973. The covenant has a number of different restrictions within it relating to different parts of the land which came within its scope. It is generally understood that the Section 8 Covenant was given to the National Trust to maintain the open, undeveloped nature of this area of coastal plain and provide a gap between the settlements of Littlehampton and Middleton-on-Sea. The land is predominantly in agricultural use with scattered barns and other agricultural buildings. It is low lying land and therefore there are drainage ditches which crisscross much of it. At its south-eastern end there is an area of sand dunes which are protected as an SSSI. The covenant has been highly effective and the protected land remains one of the only areas of undeveloped coastline within Sussex that falls outside a national landscape designation. The main cables from the offshore installation makes landfall at land at Climping part of the land protected by the Normanby Covenant, where interconnectors are proposed to facilitate the ongoing onshore cable routing, and other assoiated works. This affects land under Works Plans 6, 7, 8 ,9, 10, 11, 13 & 15, Sheet 01. The National Trust has well established processes for working with third parties to scope out and document appropriate suspension of section 8 covenants to the extent necessary to enable development and has been working with the Applicant to agree the same here. Pending resolution of those negotiations the Trust objects to the cable landfall route and associated works, interconnectors and cable pits on the covenanted land at Climping due to the impact of the development on the conservation interest the covenant was put in place to protect. As a general comment, the National Trust welcomes the opportunity to comment in respect of the overall development and we	046	The Applicant notes the description of land interests by National Trust. National Trust has two separate interests in land affected by the Proposed Development which comprise of: 1. Freehold interest in land at Washington Land owned freehold by National Trust but subject to a tenancy agreement with Lorical Trust. 2. Climping Covenant Land Section 8 of the National Trust Act 1937 provides that the National Trust may, by agreement with a landowner, impose a covenant restricting the use of land outside the National Trust ownership in pursuance of the National Trust's charitable purpose to preserve land of beauty of historic interest (a "section 8 covenant"). The National Trust is the beneficiary of a section 8 covenant covering approximately 375 hectares of land between Littlehampton and Middleton-on-Sea in West Sussex, which is within the Proposed Development Order Limits The land at Climping which is affected by the Covenant is largely arable land with some coastal scrubland and also an area of the foreshore. The following plots are impacted by the Proposed Development as shown on **Land Plans Onshore [PEPD-003]**: -1b/3 -1b/4 -1b/5 -1/5 -1/6 Details of the intertidal and onshore works as they apply to the Land Interest's land holding are shown on Sheets 01, 21 and 22 of the **Onshore Works Plans [PEPD-005]**. The Land at Climping comprises land in the intertidal area, and arable land. The intertidal area is required for: Works no. 6 – Underground Landfall connection works -intertidal area. Parts of the arable farmed land are required for Works no. 7 – Underground Landfall connection works – onshore area Works no. 8 – Landfall connection works, launch pit and jointing: Works no. 9 – Cable installation works (including construction and operational access) Works no. 11- Soil Storage Works no. 13 – Temporary Construction Access

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	have made detailed comments relating to specific issues that directly affect our interests. In relation to Landscape and Seascape impacts, the Trust recognises that the scheme has been altered from its original form and layout to seek to address concerns around impacts on the heritage coast and landscape and scenic quality of the South Downs National Park. However, we note the comments of both Natural England and the South Downs National Park who continue to raise some concerns. We would urge the Examining Panel to carefully consider these important comments, along with their supporting evidence, in relation to landscape and seascape impacts from these statutory consultees.		An existing track on the western part of the land is proposed for a permanent access (Works No. 15), for which operational access rights are sought to access the cable route. A package of Cable Rights, a Cable Restrictive covenant and Temporary Rights are sought Additional permanent access rights are required for maintenance purposes. The land impacted by the Covenant is freehold owned by the Baird Farming Partnership. The response to the Baird Farming Partnership (**Table LI92**) Relevant Representation sets out the effects of the Proposed Development on land use. Washington Land National Trust land at Washington comprises National Trust freehold owned pasture land required for: - Work no. 9 cable installation works (including construction and operational access) – plot 22/7. Sheets 22 of the **Onshore Works Plans [PEPD-005]**. - Work no. 13 -Temporary Construction access and associated junction works/ visibility spays plot 21/37, 21/32 21/33 and 21/36. These are shown on Sheets 21 and 22 of the **Onshore Works Plans [PEPD-005]**. Land west of Washington on both sides of the A24 is owned by National Trust. Much of this land is subject to a tenancy agreement with Lorica Trust. The land is used as pasture for grazing and hay. Land to the west of the A24 is affected by a temporary construction access (Work no. 13) running north – south through the centre of a field used for grazing. Land outside of the field fence line between the field and the public highway is also required for junction works and visibility splays (also Work no.13). The Land required for the construction access will be fenced off with crossing requirements to be discussed with the tenant. Land to the east of the A24 known as "Jockey's meadow" is used for farming hay and the Applicant understands is also used for informal recreation. This land is affected by the onshore cable installation works (Work no.9). The cable installation methodology across the A24 and through Jockey's meadow and the adjoining Washington recreation ground is proposed to be by trenchless crossing. As a result of this proposed methodology, there is not anticipated to be any impacts on farming operations at Jockey's meadow either during construction or operation of the project. A package of Cable Rights, a Cable Restrictive covenant and Temporary Rights are sought over the Washington Land. **Engagement**

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			The Applicant has held regular Teams calls with National Trust updating representatives on the Project progress and providing information about the proposed project and construction works. Issue 1: Land at Washington: the Applicant has had regular Teams meetings with the land agent acting on behalf of National Trust and Heads of terms have been progressed to a point close to agreement. The Applicant understands formal approval is required from National Trust and further to this, the detailed land agreements will be progressed. Issue:2: "Normanby Covenant Land" (or Climping Covenant Land". Heads of terms have been agreed for a land agreement for the suspension of the covenant as it may relate to the Applicant's development proposals. The land agreement has been subject to detailed discussions and is in a final form for signing by both parties.

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Table LI50 Applicant's Response to Diane Ward [RR-097]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI50.1	Proximity to holiday caravans at Brookside Caravan Park where I have a holiday home. Dirt and dust from 6 months plus work. Vibrations and noise. Insurance issues for caravans.	N/A	The Applicant notes the issues raised in this relevant representation. All environmental matters provided within this Relevant Representations have been responded to by the Applicant in **Table 6.9 'Brookside Caravan Park'** (below).

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Table LI51 Applicant's Response to Gina Perella Lewis [RR-132]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI51.1	As a freeholder of LAND REGISTRY REF WSX 228882, in Lyminster, West Sussex, I would like to register my objections to the Rampion 2 cable route which would directly impact our land. I wish to advise you that I do not agree to the use of our land and strongly oppose the Rampion 2 modified route. In 2021, I, along with the other three trustees of land belonging to us, appointed a Land Agent to market our land for the purposes of development, for the construction of housing. The agent we appointed is Mr W McLaren of McLaren-Clark Consultancy, Arundel. A new Littlehampton bypass which runs directly to the east of our parcel of land had made our land desirable to developers and promoters. We had been contacted by various Interested parties over a period of several months and so we felt that it was the right time to seek professional help and appointing our land agent. After discussions and various meetings with builders, promoters and developers, it was concluded we would proceed with Stonebond Properties (Guildford) Ltd. After verbally agreeing on mutual terms, guided by our agent, the next step was for Stonebond to raise Heads of Terms for our signature, and to put in a planning application with Arun DC, all at the expense of Stonebond. We four trustees are individual family members and owners of the land. We are not a company or business. Rampion 2's agent, Nigel Abbott of Carter Jonas AND their Land Transaction Manager, Vicky Portwain have met with us in our Land Agents offices. We have had to ask for every meeting held with a Rampion representative, and responses to our emails can take months. I am still waiting for a response to an email sent five months ago, despite requesting a response more recently, for points I would have liked answered before logging my objections today. Vicky Portwain of RWE has asked for proof of our position with plans to develop, in the way of minutes of meetings (which we never took) and documents of offers made etc. We have provided all the evidence we have, giving her the names of companies, which initially approached us, and the short list of those invited to meet with us at McLaren Clark offices. We did not take minutes of any meetings. Nore did Stonebond get so far as to apply to Arun for outline Planning Permission. The first we heard of this unknown company, RWE, was by a letter inviting us, along with any other member of the public, to a drop-in centre held by Rampion advising of an alternative cable route. This route would impact any and all plans we have for developing our land, either now, or in the future. Subsequently, all talks with our chosen developer have ceased. The cable cannot be built over, crossed by drainage, sewage pipes, cables etc. We have asked Rampion for an alternative route to cross our land. One which would take the cable to the far south of our land, skirting around what has been designated as a flood zone area, but in over the 50 years that our family has owned the site, it has never flooded, At first Rampion's agent, Mr Abbott seemed open to our suggestion, and we were persuaded to enter into a Survey Access Licence, giving Rampion surveyors access to our land for a twelve month period. In doing so, I would like to make it clear that this was not a reflection of our intentions to stop RWE using our land for their own purposes. Nor were we tempted by the compensation fee which was offered. The non-evasive walk over tests that Rampion2 needed to have carried out was something we trustees were lead to believe showed our willingness to cooperate with RWE and Carter Jonas where we could. On the 30 May 2023 Vicky Portwain wrote to the trustees informing us of a meeting which was held to discuss The Trustee Proposed Cable Route Versus The Rampion 2 Proposed Route. We were left very disappointed and actually crushed to learn that RWE had completely held our hopes and plans for our land with such utter	047	**Context** The Land Interest owns pasture land which is affected by the proposed cable route (Plots 4/22 & 4/23), works no.9, for which a package of Cable Rights and a Cable Restrictive Covenant are required. The Land Interest also owns a strip of roadside verge which is affected by the proposed temporary construction access (Plots 4/12 & 4/21). Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 4 of the **Onshore Works Plans [PEPD-005]**. The proposed cable route passes through the middle of the Land Interest's land holding, keeping away from residential properties to the North and the Black Ditch (Flood Risk Zone 2) to the South. In addition, an HDD entry / receptor pit for a trenchless crossing of Lyminster Road (A284) in Plot 4/22. The Land holding has principally been used for grazing and is split into a number of small paddocks. The location of the cable route would result in further splitting of fields for the construction period. Appropriate fencing of the cable route will be used and appropriate crossing points installed on the basis that the fields are to continue to be used for grazing. **Consultation and Engagement** The original proposed cable route outlined in the Applicant's first Statutory Consultation (July to September 2021) did not directly impact on the Land Interest as the proposed cable route was to the West of Lyminster Road / Lyminster with a proposed crossing point just to the south of the Crossbush / A27 Junction. Therefore, there would have been no requirement for the Applicant to directly consult with the Land Interest at this time. The Land Interest changed their ownership details in December 2021 into the names of the Trustees of the Land at Lyminster Trust. The Applicant wrote to the Land Interest (the formerly registered proprietors) in March, April and June 2022 and hand delivered a letter to the formerly registered proprietors address in June 2022 seeking to engage with the Land Interest. Due to the time delay in the Land Registry updating their website, the Applicant only became aware of the change of ownership details in October 2022 whereupon a letter was issued to the Land Interest in advance of the October 2022 second Statutory Consultation Event. **Proposed use of the land** The Land Interest outlined their intended use of the land for development purposes in their initial meetings with the Applicant during the second

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	disregard and contemp. Had we been invited to attend the meeting held by Rampion engineers, environmental surveyors and land team when discussing the 'Trustee preferred Route V Rampion 2 Route,' we would have given a clear indication of where our preferred route would travel and had the opportunity to give responses to their arguments in sticking to their 'Red Lines' for their cable route across our land. Their decision was made on three points: *Flood Zone Area *NOISE *COSTS. *Moving the cable corridor further south would move it into a flood zone area. The trustees preferred route to the south of RWE RED LINES, would avoid the flood zone area. *Moving the HDD pit further south (Should It Be Required) brings about environmental impacts in terms of noise impact at The Caravan Park- The Rampion 2 proposed route would bring about environmental impacts in terms of noise impacts on homeowners and residence of Orchard Lane and Lyminstther Rd North. Both these roads/lanes run directly north of the Trustee Land at Lyminster, with Orchard Lane running along the northern boundary of our land. The Lyminster 'A' Road runs between the Trustee Land at Lyminster and The Caravan Park, producing traffic noise from the main road. This traffic noise would eliminate some of the noise impact of the Trustees Proposed Route. Regardless of this, the noise levels would not impact on either area for long, and certainly does not stop land being passed for development. Building sites produce high levels of noise to neighbouring properties, yet land alongside existing housing is passed for development. The noise impact on either route would be minimal compared to, say, a nine-acre development project. The Rampion 2 proposed route would impact on us the landowners, in perpetuity. I feel The Trustee Proposed Route is preferable in terms of noise impact. Environmental: Residential properties and community Facilities- Lyminster Trustees Proposed Route was considered by Rampion worse due to potential noise impacts on Brooklands Caravan Park- The Rampion 2 proposed route will also have an impact on the homeowners along the northern boundary of Trustee Land at Lyminster. These homeowners are closer to the Rampion 2 route than the caravan park is to the Trustees Proposed Route. It should be noted that my family have been shooting on our land at Lyminster for more than 40 years. This too has had an impact on noise levels. We are within our rights as the landowners to enjoy raised levels of noise within time constraints set by the council. Works on either route would be ongoing during the daytime only. Moving the cable to the south, as proposed by us, would have minimal impact on the Caravan Park, particularly as there is constant traffic noise from the main Lyminster A Road which runs between the two areas in question. *Water Environment: The Trustees do not propose the cable be situated in Flood Zone Area 2 or Flood Zone Area 3. The Trustees have asked that the route enters the Land at Lyminster west side from Lyminster Road and just north of the designated flood zone area, and once clear of Flood Zone Area 2, follow the southern boundary which is not a flood zone area. It is worth mentioning that although a south westerly strip of our land has been designated as in a flood zone area, this only due to what is known as The Black Ditch Area which sits some feet below our land. We have kept our horses, sheep, cows and pigs on that part of the field as it does not flood. I can't help seeing the irony of our situation, given that RWE Cables, Drilling, pipelines etc. will be in The English Channel! Regardless of this, the trustee preferred route avoids this strip of FZA. It is clear from the diagram and map of Trustee Land at Lyminster that on exiting our land on the east side, the route 'elbow joints' north onto the neighbouring parcel of land. We propose a similar 'elbow joint' be adopted once the route has cleared the few metres of designated flood area on the south westerly corner of our land and continues		Statutory Consultation Event in October 2022 and in subsequent meetings in November 2022, and presented their concerns relating to the proposed cable route. The Land Interest states that informal planning discussions were undertaken with Arun District Council. However, the Land Interest has not provided any form of file note or notes of the meeting / discussion. In any event, the Land Interest's land is not designated for residential development (within the Local Plan) nor is it a site that has been allocated or called forward as a Strategic Housing Land Availability Assessment (SHLAA) by the local planning authority. The Applicant understands that the land is designated as a Biodiversity Opportunity Area. Policy ENV DM3 of the Arun District local plan 2011-2031 states that "within Biodiversity Opportunity Areas (BOA's) shown on the policies map or where likely to have an impact on the species or habitat within the BOA, any application for planning permission shall be accompanied by a properly conducted survey of presence of the species or habitat and the impacts that development may have on the BOA". The Applicant is therefore of the view that the alleged development potential for this land (if any) is not substantiated, is highly speculative and at best could only ever be in the longer-term, well after the construction of the Rampion 2 scheme. No weight can be placed on these proposals in the balancing of the benefits of the Rampion 2 project against the impact on private rights. Nor in the absence of any option / promotion agreement over the land for its development, do the alleged development prospects have a bearing on the value of the land over which the cable permanent easement is sought. The Applicant has requested the Land Interest to share details of the offers received for the sale / development of the land but these have not been provided to date. The Applicant notes however that valuation considerations are not matters for the examination of the draft DCO. **Re-alignment of cable route request** The Applicant confirms that the Land Interest did request whether the cable could be re-aligned along the Southern most boundary of the property. The Applicant has considered whether the cable route could be re-aligned through the Land Interest's land. The cable route could not be moved further South due to further interaction with Flood Zones 2 & 3. In accordance with the Planning Practice Guidance, a sequential approach has been taken to guide development to areas of lowest risk of flooding. The route could not be

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	along the southern boundary. It would then 'elbow joint' northbound to connect with the neighbouring land to the east. Why is Rampion 2 making this so difficult for us? We were led to believe by their representative that this would not be an issue, should we comply. Another route favoured by me and is also the favoured route of my MP, who I need not name. I'm sure he will be making his own objections to the cable route in its entirety. The Rampion 2 cable route would have less impact IF it were to follow alongside (by the required metre gap) of the existing cable route of the Rampion 1 project. Is there a good enough reason to have impacted on more landowners and on more countryside. Where is the biodiversity and environmental impact consideration in that decision? Would these Windfarms be better placed in The North Sea, where they would produce far more energy than on the calmer, far less windy, southern coastline. Could this yet again be put down to costs and profit for Rampion. *Costs: Engineering costs would be higher with the Lyminster Trustee Proposed Route- The engineering costs of the Lyminster Trustees Proposed Route would not be greater than the loss incurred by the landowners with the Rampion 2 route. RWE are asking us to allow the annex of our land at the most economical rout for Rampion 2. No consideration has been made for us, the landowners, to have the right to use our land as we plan. We have been asked for proof of its imminent development. However, the proposed cable route will stop our land from EVER being developed. The Trustees have tried to work with Rampion 2. RWE agreed to work with us for our mutual benefit. How exactly have we benefitted? No compromise has been shown to us. We do not want the cable route set on any part of our Land at Lyminster. We have offered a compromise. One which may impact somewhat adversely for both Rampion and the Landowners financially but does ensure both parties are able to deliver on their plans as quickly and smoothly as possible. It is clear that RWE's decision has been made solely on financial benefits to Rampion profits. I feel that Rampion 2 and their contractors have considered the Trustee Proposed Route merely on the impact it would have on the company profits, employee bonuses and shareholder dividends. It is beneficial for Rampion 2 to choose a route and acquire the use of land which have minimum costs for profit. The Trustees are obligated to secure the landowners maximum long-term potential for their asset, which of course is their land. Our asset is under threat of being blighted by Rampion 2. This is completely unnecessary. I feel we have lost our democratic rights, and Rampion 2 are aware they are able to take advantage of this. The Land at Lyminster is a prime developable site. Developers, Promoters and our Land Agent assured us that the new bypass to the East of our land would strongly benefit any future application for development. The Trustees were in the process of gaining the lands potential for development, and we had began putting those plans into action. The construction of the new bypass to the East of the land and prices per acre for developable land were now in our favour. The Trustees did not factor Rampion 2 into that equation. We are asked to supply proof of a planning application etc, yet RWE have been told on numerous occasions that we had not got that far. We had chosen our preferred developer and were in the process, with the help of our Agent, to drawing up a contract. Once Rampion 2's plans were made public, our plans were forcibly halted. Vicky Portwain has suggest we hold another meeting for further discussions in relation to the noise survey work that could be undertaken and further refinement work. The meeting that is being suggested is not to see how the cable could be set at the Trustees preferred route to the south of our land. Rampion 2 ask us to give permission for Further surveys to take place. We feel we are being tricked again, into signing		moved further North due to the proximity to residential properties. In addition, any re-alignment through the Land Interest's property would require further re-alignment with the proposed Lyminster bypass (on another landowner's land adjoining the Land Interest's land immediately to the East). The Applicant met with the Land Interest in May 2023 and discussed in detail the concerns raised by the Land Interest. The Applicant followed up this meeting by submitting a letter (dated 23 May 2023) providing reasoning as to why the Land Interest's request to re-align the cable route could not be accommodated. Further information regarding route alternatives have been responded to by the Applicant in **Table 6-4 'Route / Alternatives'**. **Environmental and ecological constraints** The Applicant was informed of the Land Interest's ground water monitoring surveys, and at no point, did the Applicant request these surveys were stopped. Had the surveys continued the Applicant may have sought to request the results of these surveys had been shared. The Applicant's response regarding environmental impact matters provided within this Relevant Representation, including impacts to ancient woodland and groundwater contamination, have been responded to by the Applicant in **Table 6-2 'Environment and disturbance'**. **F**urther information provided regarding Terrestrial Ecology has been provided in the Applicant's response in **Table MPB3 'Ecology' (Document Reference 8.24)** and **Table 6-14 'Flooding and Flood Risk'**.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	another agreement. They have already carried out the Noise Survey. They are aware of engineering and environmental constraints. We signed a document allowing RWE to carry out tests on our land, with the promise of a compromise on the cable route. Our compromise was allowing them to take a part of our land for a cable we do not want, land which is worth far more to my family than it is to Rampion and its shareholders. We were tricked into allowing easy access across our land. It is clear to us now, that Rampion are only concerned with ease and minimal expense for their project, choosing landowners with no influence or power to affect the company's choices. Had we been aware of an unknown company's plans for our site, in hindsight we would have commenced with our plans to develop our land sooner and acquired planning a year or two ago. Thus providing RWE with the evidence they ask for, and forcing them to go elsewhere for their route. Perhaps Rampion would have stuck to its original route. Once again, our misfortune! We would have kept minutes of every meeting with our Land Agent, McLaren Clark and with each of the Developers and Promoters that we interviewed in our Land Agents offices, and during our informal chats with Arun District Council planning representative, and with Rampion's Agent, Nigel Abbott (with whom we HAD asked for minutes of meetings with him. None were produced). We would have kept every proposal and offer from the companies we ultimately disregarded. We could have provided Rampion with a file of our progress. How could we have known? Whether this would have influences Rampions decision, I doubt it! It seems this German company has been given carte blanche to trample over any plans we landowners have. Businesses and residence appear to be considered by Rampion. Why do the landowners feel they are forced to comply and get no such consideration? I am determined that as landowners, our consideration is paramount, particularly as we have given Rampion 2 every opportunity to work with us. We have informed Rampion of legal fees already incurred by us, physical surveys, land clearance, and all with a view of selling the land for development. We had engaged a company to carry out winter ground water monitoring. RWE's choice in using our land has prevented such work from being needed. No developer, either now or in the future, will invest and put forward for planning a parcel of land divided by a Rampion cable route. That cable, once set, cannot be crossed. The Rampion 2 project has already set back The Trustees plans for the site by a minimum of 5 years, this due to Rampion 2's works and completion schedule. It is the Trustees wishes to fence off the southern area needed for the cable route and re commence talks with our Land Agent and Developer to deliver on our plans for our land. We could re start the Winter Ground Water Monitoring this winter IF Rampion would consider our wishes more and their profits less. Rampion 2 have already imposed financial impacts on the landowners, in delaying the development of our site. Our land has been recognised as in an ideal position, set for being put forward for development. The new housing development in Littlehampton has stretched northbound and can now be seen very clearly to the east of our fields. RWE wrote to the original trustee (no longer a trustee) at the old address in Angmering Village. Had they sent a representative to that address, they would have been given the names and addresses of the new trustees. RWE intended to use land it did not own for their project, and merely sent a letter to inform owners of its intentions. Each and every landowner impacted by RWE cable route SHOULD have been informed in a private meeting, not by letter and then a public drop-in centre with other members of the general public. Again, showing complete disregard and contempt for owners		

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	of land they make plans to acquire for their R2 project. Regards Gina Perella Lewis Trustee M Hacon MT Camilleri MT Narale Trustees		

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Table LI52 Applicant's Response to Michael Stevens [RR-245]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI52.1	Serious concerns regarding rampion 2 project to install cable and roadway close to our holiday home in Lyminster, West Sussex.	N/A	The Interested Party relevant representation does not identify where their holiday home is. In the circumstances, the Applicant reserves its ability to comment further if necessary in due course. In the event that the holiday home is situated at Brookside Carvan Park, all environmental matters provided within this Relevant Representations have been responded to by the Applicant in **Table 6-9 'Brookside Caravan Park'**. This includes references to the **Outline Code of Construction Practice (CoCP) [PEPD-33]** and how these are secured via the project require requirements in the **Draft Development Consent Order (DCO) [PEPD-009]**.

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Table LI53 Applicant's Response to Paula Newman [RR-295]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI53.1	The corridor will cut my smallholding of 17 acres in half and run very close to my house. The impact on my livelihood and well being is worrying.	048	**Context** Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 21 of the **Onshore Works Plans – Revision B [PEPD-005]**. The Land Interest owns a small holding to the south of the A283. The Land Interest owns pasture land (currently used for grazing) included within the Order Limits as Works No.9 – Cable Installation works (including construction and operational access), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. The area of the small holding affected by Works No.9 comprises Plot 21/22 as shown coloured blue on the **Land Plans Onshore – Revision B [PEPD-003]**. In addition, there is a small area of the land holding included within the Order Limits as operational access (Works No.15), for which a package of Operational access rights is sought. This is shown blue in the **Land Plans Onshore – Revision B [PEPD-003]** as Plot 21/23. The Land Interest lives on site in a residential dwelling situated to the west of the landholding. The dwelling is located outside of the Order Limits, to the west of the proposed cable corridor. The dwelling is accessed from the east via a farm track which will be temporarily severed by the proposed cable construction (Works No.9). The project has commitments regarding maintenance of access for Private Means of Access (PMA) and associated mitigation that is discussed below. **Maintenance of Access** Mindful of residents' concerns, the Applicant updated the **Outline Code of Construction Practice (CoCP) [PEPD-033]** at the pre-examination deadline. Additional detail has been provided at Section 5.7.10 to explain how construction and access will be managed. In summary: • Access restrictions will be kept to a minimum, with a diversion provided if possible; • Contractors will work with local stakeholders and accommodate reasonable requests for access; • The trench will be covered outside of working hours, and access will be restored in emergencies; and • Closures will be communicated to local residents in advance. **Impacts and Mitigation on Agricultural Uses** As the project progresses to the point of entry being taken for construction, the Applicant is keen to have ongoing discussions with the Land Interest to understand how best to mitigate any temporary severance of land during the construction period, which can include temporary accommodation works (e.g. fences, gates and crossing points). In this location, the cable construction corridor runs through the centre of the land holding. The Applicant will continue to engage to further understand the Land Interest's specific requirements to accommodate the small

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			holding operations and minimise disturbance wherever possible. This could include crossing points to be agreed with the Land Interest across the cable installation area (Works No.9) to ensure parts of the field will remain available for use. Detailed cable routing will be refined further to pre-construction surveys. **Compensation** If Compulsory Purchase Powers are used, affected Land Interests will be compensated in accordance with the provisions of the Compensation Code. Claims for disturbance and crop loss will be considered where reasonable, substantiated and shown to be caused as a direct consequence of the temporary use of the land and the works in accordance with the relevant legislation. Once the cable has been constructed and the land reinstated, the land can be returned to normal use.

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Table LI54 Applicant's Response to Alan Wayman [RR-302]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI54.1	First of all, I own a holiday caravan in Littlehampton, near your proposed relief road and my concerns are as follows: - 1) The Noise, this is my holiday home and I come here for peace and quiet. 2) The vibrations of heavy traffic 3) traffic congestion 4) Air pollution eg, dust and debris thrown up by heavy Lorries/Machines. 5) Endanger to wildlife and wildflowers, bushes, trees etc. 6) most importantly My health, [REDACTED] These are just a few concerns of mine and I will send a more detailed report when registered. Sincerely Mr Philip Alan Wayman	N/A	The Interested Party relevant representation does not identify where their holiday caravan is. In the circumstances, the Applicant reserves its ability to comment further if necessary in due course. In the event that the holiday home is situated at Brookside Carvan Park, the Applicant notes the issues raised in this relevant representation. All environmental matters provided within this Relevant Representations have been responded to by the Applicant in **Table 6-9 'Brookside Caravan Park'**. **Chapter 28: Population and human health, Volume 2** of the ES **[APP-069]** draws from and builds upon key outputs from inter-related technical disciplines to establish the potential health and wellbeing impacts associated with a wide range of environmental and socio-economic factors which can impact human health and wellbeing. These include changes in noise, air pollution and traffic, all of which are raised as concerns in this Relevant Representation. The results show that there would be no significant adverse population and human health effects during both construction and operation of the proposed development.

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Table LI55 Applicant's Response to RAM2-GDPR001 [RR-308]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI55.1	As a resident of [REDACTED] the first point of objection is regarding the cable plan EN010117-000161-2 sheet 32 which shows that [REDACTED] will be subject to public right of way closures in two places, with no alternative means of vehicle access to my home which is unacceptable. Kings lane is a dead end private road with multiple homes and working farms but has been labelled as a footpath and bridleway which is incorrect and a misrepresentation of usage. The cable needs to be moled not trenched to allow continuous access for residents and farm workers who need to be able to get to work, school, access emergency services etc I also object to the supplementary notice of acceptance of a dco plot number 32/13, this is a totally unnecessary and also risks residents losing rights of access if used a ransom strip, this additional dco has not been mentioned in any previous communication with residents. Kent street is completely unsuitable for construction vehicles being a quiet single track lane with soft verges and is regularly used by cyclists and walkers Traffic is already a big problem on the A272 particularly between kent street and cowfold, the increase with construction vehicles due to the oakendene substation site will lead to very serious congestion as well as safety issues given how dangerous the Kent street junction already is.	N/A	**Context** The Applicant understands the Land Interest is a resident of Kings Lane/ Moatfield Lane. Details of the operational access as it passes through this location are shown on Sheet 32 of the **Onshore Works Plans – Revision B [PEPD-005]**. The Applicant assumes the Land Interest has private rights of access over Kings Lane/ Moatfield Lane, (Plots 32/2, 32/3, 32/4, 32/5, 32/6, 32/11, 32/12/, 32/13 and 32/15), as shown coloured blue on the **Land Plans Onshore – Revision B [PEPD-003]** which provides access to their residential property. **Operational Access** Kings Lane/ Moatfield Lane is within the Order Limits for an operational access (Works No. 15). The Applicant seeks new rights (i.e. operational access rights) over Kings Lane/ Moatfield Lane, for this purpose, but does not propose to acquire the land. The rights sought by the Applicant will be exercised in common with existing private rights of access and will be entirely consistent with the existing use of the land as an access road. No ransom strip is created as the Applicant will not own the road and is not intending to purchase Plot 32/13. Operational Access Rights are defined in Schedule 7 of the **Draft Development Consent Order (DCO) [PEPD-009]** and in summary comprise rights of access with or without vehicles and equipment: *for the purposes of operation, maintenance and decommissioning of the authorised development*". The rights are expanded on further in Schedule 7. Operational access (for light personnel or 4x4 vehicles) will be required throughout the project's lifetime, for inspections and maintenance of the cable route. It is anticipated that the Applicant would need to access the lane by either walking or driving, to carry out occasional maintenance responsibilities. **Cable Installation Works** In addition, Kings Lane/ Moatfield Lane is crossed twice (Plot 32/11 and Plot 32/3) by the proposed cable route (Works No. 9 – Cable installation works (including construction haul road and operational access)), which will involve open-cut trenching installation methodology, and therefore the Cable package of rights and restrictive covenants are sought, as identified in Schedule 7 to the Order. Please see comments regarding maintenance of access below. **Plot 32/13 (Unregistered Land)** The small strip of land (Plot Number 32/13) at the end of Kings Lane, over which the Land Interest has private rights of access, is unregistered. Kings Lane itself (to the west of Plot 32/13) is a privately owned road. To the east of Plot 32/13 lies Plot 32/14, which is also unregistered, but falls within the adopted highway extent as verified by data provided by West

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			Sussex County Council. The adopted highway then extends onto Kent Street to the east. The freehold ownership of Plots 32/13 and 32/14 is unknown (they are both unregistered on the Land Registry). As Plot 32/13 is unregistered and unadopted, the Applicant followed a process in accordance with its land referencing methodology (as per the Land Referencing Methodology within the **Statement of Reasons** **[PEPD-012]** to seek to ascertain who owns the land. The Applicant placed a notice on site on 6 April 2023 and maintained this weekly for six weeks requesting for someone to come forward if they believed they owned the land. No responses were received. The Applicant subsequently placed a notice pursuant to Section 56 of the Planning Act 2008 on site between September and November 2023, which the Land Interest refers to having seen. This notice is in accordance with Regulation 8 of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) and Regulation 16 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended), the purpose of which is to provide notice of the acceptance of the application of the **Development Consent Order (DCO)** **[PEPD-009]** for examination by the Planning Inspectorate. **Definition of Kings Lane/ Moatfield Lane within the Book of Reference** The Applicant accepts that Kings Lane/ Moatfield Lane is a private road which also has a public bridleway and public footpath running along parts of it. The Applicant has reviewed the West Sussex County Council Public Rights of Way plan which confirms that bridleway 1730 runs the length of Kings Lane and part of Moatfield Lane. Further information can be found online: https://www.westsussex.gov.uk/land-waste-and-housing/public-paths-and-the-countryside/public-rights-of-way/public-rights-of-way-imap/imap/ As detailed within the **Book of Reference** **[APP-026]**, the DCO allows for the 'Acquisition of New Rights or the Imposition of Restrictive Covenants over... land being private road, verge (Kings Lane), public bridleway (COW/1730/3), public footpath (COW/1783/1). **Bridleway / Impact on Public Rights of Way** The DCO seeks to temporarily close the bridleway 1730 across the cable corridor for which a diversion will be in place between points 50a and 50b. As mentioned above, the private road access will not be diverted. The Applicant is mindful there may be some temporary disruption during construction. However, during the operational phase, access rights along the lane will be unaffected, and the Applicant's rights will be exercised in common with other private rights. The matters provided within this Relevant Representation regarding impacts to public rights of way have been responded to by the Applicant in **Table 6.26 'Impacts on Public Rights of Way'**.

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			Traffic Concerns As part of the DCO process a thorough assessment of the likely impact of traffic upon the local road network and highway assets during the construction phase of works has been completed. Traffic volumes on the A272 have been observed and presented in the **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum, Volume 2** of the ES **(Document reference 6.2.32)**. Further information has been provided in **Table 6-2 'Environment and disturbance'** and **Table 6-1 'Traffic'** The proposed routing strategy is further detailed in the **Outline Construction Traffic Management Plan (CTMP) [PEPD-035a]**. The CTMP would be secured by Requirement 5 of the **draft Development Consent Order (DCO) [PEPD-009]**. **Maintenance of Access** Mindful of residents' concerns, the Applicant updated the **Outline Code of Construction Practice (CoCP) [PEPD-033]** at the pre-examination deadline. Additional detail has been provided at Section 5.7.10 to explain how construction and access will be managed. In summary: • Access restrictions will be kept to a minimum, with a diversion provided if possible; • Contractors will work with local stakeholders and accommodate reasonable requests for access; • The trench will be covered outside of working hours, and access will be restored in emergencies; and • Closures will be communicated to local residents in advance.

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Table LI56 Applicant's Response to Toby Chapman [RR-402]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI56.1	I am writing as the owner of [REDACTED] (WSX122084 and WSX357265) regarding the Rampion 2 draft project development consent order to raise multiple objections and highlight a failure to consult properly. The first point of objection is regarding the cable plan EN010117-000161-2 sheet 32 which shows that Kings Lane will be subject to public right of way closures in two places, with no alternative means of vehicle access to my home which is unacceptable. [REDACTED] is a dead-end private road with multiple homes and working farms but has been labelled as a footpath and bridleway which is incorrect and a misrepresentation of usage. The cable needs to be moled not trenched to allow continuous access for residents and farm workers as well as council service vehicles, visitors and emergency vehicles I also object to the supplementary notice of acceptance of a dco plot number 32/13, this is a totally unnecessary as ownership is not required for project delivery and risks residents losing rights of access if used a ransom strip, this additional dco has not been mentioned in any previous communication with residents. The proposed route goes through part of [REDACTED] which will have stables, an indoor school and associated equestrian facilities including fields for grazing. The cable route threatens the use of these facilities as well as the safety and security of the horses which are competition horses and require a high level of care and management. The cable route and its construction need to take this into account for example rerouting into the strip of disused land north of cowfold stream or at least to the very north of the field boundary. Kent street is completely unsuitable for construction vehicles being a quiet single-track lane with soft verges and is regularly used by cyclists, walkers and for horse riding. Traffic is already a very significant issue on the A272 particularly between kent street and cowfold, the increase with construction vehicles due to the oakendene substation site will lead to very serious congestion as well as safety issues. Overall, the DCO application is fundamentally flawed, there has been a complete lack of due diligence into affected party rights and easements, there has also a been a wider failure to consult properly and therefore no recognition of the impacts of the project.	049	**Context** The Land Interest owns pasture land which is affected by the proposed cable route (Works No. 9 – Cable Installation (including construction and operational access), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. The area affected by Works No.9 comprises Plot 32/3 as shown in blue on the **Land Plans Onshore [PEPD-003]**. In addition, the Land Interest has private rights of access over Kings Lane/ Moatfield Lane, (Plots 32/2, 32/3, 32/5, 32/6, 32/11, 32/12/, 32/13 and 32/15) as shown coloured blue on the **Land Plans Onshore [PEPD-003]**, which provides access to their residential property. The Land Interest also owns the freehold of Plot 32/4 which provides access to their property. Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 32 of the **Onshore Works Plans – Revision B [PEPD-005]**. **Planning Application for a new equine facility** In November 2021, the Land Interest submitted a planning application (Planning Application No. DC-21-2677) for a new equine facility located to the North of the farmstead comprising a new stable block, an indoor arena and associated equine facilities. The Applicant reviewed these proposals and discussed them with the land interest and subsequently refined the Order Limits boundary. The Applicant understands from the drawings provided that the proposed cable route will not directly impact on the proposed equine buildings. The pasture land included within the Works No.9 area will have temporary impacts during construction, as well as the associated facilities. The Applicant will seek to engage further with the Land Interest regarding detailed construction access design and accommodation works in accordance with the **Outline Code of Construction Practice (CoCP) [PEPD-003]**. However, as the Works No.9 impacts the northern section of their land holding, it will be possible to access the remaining pasture land directly from the south as this pasture land will not be severed from the wider land holding. **Consultation** Chapter 6 of the **Consultation Report [APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. **Route Amendments**

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			The Applicant can confirm that the proposed cable route through Plot 32/3 has been refined in an effort to mitigate the impact of the proposed cable route on the equine facility. Cable route alternatives and sifting matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-4 'Route / Alternatives'**. **Queries relating to Kings Lane/ Moatfield Lane** Kings Lane/ Moatfield Lane is within the Order Limits for an operational access (Works No. 15). The Applicant seeks new rights (i.e. operational access rights) over Kings Lane/ Moatfield Lane, for this purpose, but does not propose to acquire the land. The rights sought by the Applicant will be exercised in common with existing private rights of access and will be entirely consistent with the existing use of the land as an access road. No ransom strip is created as the Applicant will not own the road and is not intending to purchase Plot 32/13. Operational Access Rights are defined in Schedule 7 of the **Draft Development Consent Order (DCO) [PEPD-009]** and in summary comprise rights of access with or without vehicles and equipment: *for the purposes of operation, maintenance and decommissioning of the authorised development*". The rights are expanded on further in Schedule 7. Operational access (for light personnel or 4x4 vehicles) will be required throughout the project's lifetime, for inspections and maintenance of the cable route. It is anticipated that the Applicant would need to access the lane by either walking or driving, to carry out occasional maintenance responsibilities. **Cable Installation Works** In addition, Kings Lane/ Moatfield Lane is crossed twice (Plot 32/11 and Plot 32/3) by the proposed cable route (Works No. 9 – Cable installation works (including construction haul road and operational access)), which will involve open-cut trenching installation methodology, and therefore the Cable package of rights and restrictive covenants are sought, as identified in Schedule 7 to the Order. Please see comments regarding maintenance of access below. **Plot 32/13 (Unregistered Land)** The small strip of land (Plot Number 32/13) at the end of Kings Lane, over which the Land Interest has private rights of access, is unregistered. Kings Lane itself (to the west of Plot 32/13) is a privately owned road. To the east of Plot 32/13 lies Plot 32/14, which is also unregistered, but falls within the adopted highway extent as verified by data provided by West Sussex County Council. The adopted highway then extends onto Kent Street to the east. The freehold ownership of Plots 32/13 and 32/14 is unknown (they are both unregistered on the Land Registry). As Plot 32/13 is unregistered and unadopted, the Applicant followed a process in accordance with its land referencing methodology (as per the Land Referencing Methodology within the

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			Statement of Reasons **[PEPD-012]**, to seek to ascertain who owns the land. The Applicant placed a notice on site on 6 April 2023 and maintained this weekly for six weeks requesting for someone to come forward if they believed they owned the land. No responses were received. The Applicant subsequently placed a notice pursuant to Section 56 of the Planning Act 2008 on site between September and November 2023, which the Land Interest refers to having seen. This notice is in accordance with Regulation 8 of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) and Regulation 16 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended), the purpose of which is to provide notice of the acceptance of the application of the draft Development Consent Order (DCO) **[PEPD-009]** for examination by the Planning Inspectorate. **Definition of Kings Lane/ Moatfield Lane within the Book of Reference** The Applicant accepts that Kings Lane/ Moatfield Lane is a private road which also has a public bridleway and public footpath running along parts of it. The Applicant has reviewed the West Sussex County Council Public Rights of Way plan which confirms that bridleway 1730 runs the length of Kings Lane and part of Moatfield Lane. Further information can be found online: https://www.westsussex.gov.uk/land-waste-and-housing/public-paths-and-the-countryside/public-rights-of-way/public-rights-of-way-imap/imap/ As detailed within the Book of Reference **[APP-026]**, the DCO allows for the 'Acquisition of New Rights or the Imposition of Restrictive Covenants over land being private road, verge (Kings Lane), public bridleway (COW/1730/3), public footpath (COW/1783/1). **Bridleway** The DCO seeks to temporarily close the bridleway 1730 across the cable corridor for which a diversion will be in place between points 50a and 50b. As mentioned above, the private road access will not be diverted. The Applicant is mindful there may be some temporary disruption during construction. However, during the operational phase, access rights along the lane will be unaffected, and the Applicant's rights will be exercised in common with other private rights. **Maintenance of Access** As shown in the Outline Code of Construction Practice (CoCP) **[PEPD-033]** the crossing of the onshore cable route is identified within Appendix A under reference TRX-1de-32 as being crossed by open cut method. This means that during construction access to properties located along Kings Lane and Moatfield Lane will be temporarily affected. The strategy to maintain private means of access during this period is described in Paragraph 5.7.10 of the Outline CoCP **[PEPD-033]**. The following general principles will apply to the managed or private means of access during the cable route construction:

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			• Any access restrictions or effect on individual properties will be kept to a minimum and the Applicant will work with local stakeholders to develop individual solutions to keep disruptions as slow as is reasonably possible. • All crossings of private means of access will be developed to allow emergency access at all times. • Contractors will be required to accommodate reasonable requests for access during the working day by temporary plating of the trench unless a suitable diversion is provided around the works. • The trench will be plated or temporarily backfilled outside of construction working hours where feasible to restore access, unless a suitable diversion is provided around the works. • Any access restrictions or closures will be communicated to all residents and businesses with affected rights of access. • A nominated point of contact on behalf of the applicant will be communicated to all residents and businesses at least three months before the start of construction. A stage specific Code of Construction Practice will be required to be submitted and approved on a staged basis, in accordance with the **Outline Code of Construction Practice [PEPD-033]**, pursuant to Requirement 22 of the **Draft Development Consent Order [PEPD-009].** **Traffic Concerns:** For traffic related points please refer to the Applicant's response provided in reference **LI17.1** above and **Table 6-2 'Environment and disturbance'**. **Public Rights of Way:** The matters provided within this Relevant Representation regarding impacts to public rights of way have been responded to by the Applicant in **Table 6-26 'Impacts on Public Rights of Way'**. For Bridleway 1730 (Kings Lane) a temporary closure and diversion will be required during construction works, noting that vehicular access will be maintained as detailed above.

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Table LI57 Applicant's Response to Charles Robert Denys Arbuthnot [RR-058]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI57.1	The proposed route cuts across two of the four fields we own, which is does not need to do. There is no Plan B and I have been told that I either agree to these proposals or I will have land taken away and bought at agricultural prices. The route cuts across the SGN high pressure gas pipeline, for which, by law, I have unlimited liability. The pipeline supplies gas to Portsmouth and Southampton. At no point has Rampion, or their advisers, been prepared to enter into any discussions with me and they have now decided to put one of their main access points almost exactly over the pipeline - this is folly and could result in death.	083	Details of the onshore cable route and proposed construction access as it passes through this location are shown on Sheet 24 of the **Onshore Works Plans - Revision B [PEPD-005]**. The Land Interest has pasture land (currently used for grazing) affected by the proposed cable route (Works No.9 – Cable Installation works (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive Easement are sought. The affected land is shown coloured blue (Plots 24/10 and 24/11) on the **Land Plans Onshore - Revision B [PEPD-003]**. There is a proposed construction access (Works No.13 – Temporary construction access) that affects a small section of the pasture land, as shown in green (Plot 24/9) on the **Land Plans Onshore – Revision B [PEPD-003]**. **Impacts and Mitigation on Agricultural Uses** As the project progresses to the point of entry being taken for construction, the Applicant is keen to have ongoing discussions with the Land Interest to understand how best to mitigate any temporary severance of land during the construction period, which can include temporary accommodation works (e.g. fences, gates and crossing points). The pasture land is accessed directly from the north of the land parcel, therefore, areas to the south of the land parcel will be temporarily severed as a result of the construction works. The Applicant will continue to engage to further understand the Land Interest's specific requirements to accommodate the tenants grazing/ haylage operations and minimise disturbance wherever possible. **Engagement** The Applicant has been in regular correspondence with the Land Interest since May 2021. A site meeting was initially held in June 2021, where the Land Interest expressed concerns about the proximity of the proposed cable route to the gas main on their property. The Land Interest also attended consultation events in September 2021 and October 2022. At the latter event, the Land Interest raised concerns about a proposed construction access located in proximity to the gas main on their land and requested it was moved further to the East. In response to the feedback the Applicant considered options to reduce factors associated with the crossing of the high pressure gas pipeline that is buried at a shallow depth. The decision made was to introduce additional mitigation measures rather than to relocate the access. The proposed access route will only cross the gas main once. Within the construction corridor additional protection will be installed to comply with utility owner procedure where appropriate. Site specific mitigation will be subject to pre-construction ground investigations and will be subject to SGN's protective provisions (see below).

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Cable route alternatives and sifting matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-4 'Route / Alternatives'**.

A further site meeting was held in December 2023. At this meeting the Applicant explained that the DCO would include protective provisions for utility owners whose assets would be crossed by the Proposed Development. The Applicant explained that crossing designs and method statements would be discussed and agreed with the statutory undertaker owning the gas pipe (SGN) before any construction work progresses in the vicinity. As a result, the Applicant will have the appropriate protection measures in place as approved by SGN for the protection of the gas main which will comply with the Applicant's health and safety strategy. Paragraph 2.3 of the **Outline Code of Construction Practice (CoCP) [PEPD-003]**: Health and Safety and Environmental Management Systems states that Rampion Extension Development Limited (RED) will develop and implement a Health, Safety, Security and Environment (HSSE) Strategy for the Proposed Development. The HSSE Strategy will describe the way in which the Proposed Development will be delivered and include detail of compliance with relevant policies, Management Systems, and regulatory requirements, throughout the lifecycle of the Proposed Development. All aspects of the construction work will be delivered in accordance with the Construction (Design and Management) Regulations 2015 (CDM).

The Applicant is not aware of any alternative routes that have been put forward by the Land Interest, other than the aforementioned movement of the construction access.

Easement

The Applicant has explained to the Land Interest that they wish to negotiate rights for an easement to lay a cable within the proposed Order Limits and it is not intending to purchase land. The easement will be finalised taking no greater area than required.

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Table LI58 Applicant's Response to Claire Chapman [RR-070]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI58.1	I am a resident on [REDACTED] The planned works for the wind farm are going to have a devastating effect on our home, land and wildlife at [REDACTED] and the surrounding area. We moved here 3 years ago to escape noise and disturbance and the negative effects it had on our surroundings and quality of life. There are many aspects to the choice of route for the wind farm that concern me. We have planning permission for stables and an indoor school, the proposed route cuts straight through where my horses will be turned out, and the new building that will be in that field, but it has been ignored. It will be impossible for safety reasons to turn these horses out or ride in a building with machinery going past. They are competition horses so they can be reactive to noises or movement. It will be impossible to exercise them or ride on the lane or our private road. Also of great concern is the closure of our private lane (marked as a footpath) to our homes. You cannot expect us to be unable to leave our houses or essential traffic to have access. This is unacceptable and unsafe. I understand in other situations you are moling underneath obstructions so why can't this be done on our lane so that we have still have access? I understand that there is a compulsory purchase on a piece of land that crosses Kings Lane. This is of great concern; how do we know we will be granted access in the future over this land to reach our properties? To be told that the land and sanctuary we own and neighbouring fields are to be ripped up is devastating. The amount of wildlife that can be seen in the surrounding fields is amazing. I hadn't heard Nightingales sing until we moved here, the birds are listed as red in UK Birds of Conservation Concern. They nest in the field very close to the route. The meadows around us are filled with an amazing selection of flowers and plants in the summer, I thought we should all be protecting this environment. Undoubtably the ongoing work of Rampion will be detrimental to this. It is heartbreaking. I understand that many of the local footpaths will be closed. There are so many dog walkers here, for myself and others the walking of dogs through the countryside is paramount to mental health. Please understand the importance of this. The traffic that the substation at Oakendene is potentially going to generate will make the A272 impossible, already the traffic is sometimes stationary at the end of Kent Street leading into Cowfold. The recent closure of the A272 that led to cars using the single-track Kent Street, showed the reality that this road is not able to handle any more traffic. There are always dog walkers, riders, cyclists' children and runners using it, where will they go?	050	**Context** The Land Interest owns pasture land which is affected by the proposed cable route (Works No. 9 – Cable Installation (including construction and operational access), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. The area affected by Works No.9 comprises Plot 32/3 as shown in blue on the **Land Plans Onshore – Revision B [PEPD-003]**. In addition, the Land Interest has private rights of access over Kings Lane/ Moatfield Lane, (Plots 32/2, 32/3, 32/5, 32/6, 32/11, 32/12/, 32/13 and 32/15) as shown coloured blue on the **Land Plans Onshore – Revision B [PEPD-003]**, which provides access to their residential property. The Land Interest also owns the freehold of Plot 32/4 which provides access to their property. Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 32 of the **Onshore Works Plans - Revision B [PEPD-005]**. **Planning Application for a new equine facility** In November 2021, the Land Interest submitted a planning application (Planning Application No. DC-21-2677) for a new equine facility located to the North of the farmstead comprising a new stable block, an indoor arena and associated equine facilities. The Applicant reviewed these proposals and discussed them with the land interest and subsequently refined the Order Limits boundary. The Applicant understands from the drawings provided that the proposed cable route will not directly impact on the proposed equine buildings. The pasture land included within the Works No.9 area will have temporary impacts during construction, as well as the associated facilities. The Applicant will seek to engage further with the Land Interest regarding detailed construction access design and accommodation works in accordance with **Outline Code of Construction Practice (CoCP) [PEPD-003]**. However, as the Works No.9 impacts the northern section of their land holding, it will be possible to access the remaining pasture land directly from the south as this pasture land will not be severed from the wider land holding. **Consultation**

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			Chapter 6 of the **Consultation Report** **[APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. **Route Amendments** The Applicant can confirm that the proposed cable route through Plot 32/3 has been refined in an effort to mitigate the impact of the proposed cable route on the equine facility. Cable route alternatives and sifting matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-4 'Route / Alternatives'**. **Queries relating to Kings Lane/ Moatfield Lane** Kings Lane/ Moatfield Lane is within the Order Limits for an operational access (Works No. 15). The Applicant seeks new rights (i.e. operational access rights) over Kings Lane/ Moatfield Lane, for this purpose, but does not propose to acquire the land. The rights sought by the Applicant will be exercised in common with existing private rights of access and will be entirely consistent with the existing use of the land as an access road. No ransom strip is created as the Applicant will not own the road and is not intending to purchase Plot 32/13. Operational Access Rights are defined in Schedule 7 of the **Draft Development Consent Order (DCO)** **[PEPD-009]** and in summary comprise rights of access with or without vehicles and equipment: *for the purposes of operation, maintenance and decommissioning of the authorised development*". The rights are expanded on further in Schedule 7. Operational access (for light personnel or 4x4 vehicles) will be required throughout the project's lifetime, for inspections and maintenance of the cable route. It is anticipated that the Applicant would need to access the lane by either walking or driving, to carry out occasional maintenance responsibilities. **Cable Installation Works** In addition, Kings Lane/ Moatfield Lane is crossed twice (Plot 32/11 and Plot 32/3) by the proposed cable route (Works No. 9 – Cable installation works (including construction haul road and operational access)), which will involve open-cut trenching installation methodology, and therefore the Cable package of rights and restrictive covenants are sought, as identified in Schedule 7 to the Order. Please see comments regarding maintenance of access below. **Plot 32/13 (Unregistered Land)**

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			The small strip of land (Plot Number 32/13) at the end of Kings Lane, over which the Land Interest has private rights of access, is unregistered. Kings Lane itself (to the west of Plot 32/13) is a privately owned road. To the east of Plot 32/13 lies Plot 32/14, which is also unregistered, but falls within the adopted highway extent as verified by data provided by West Sussex County Council. The adopted highway then extends onto Kent Street to the east. The freehold ownership of Plots 32/13 and 32/14 is unknown (they are both unregistered on the Land Registry). As Plot 32/13 is unregistered and unadopted, the Applicant followed a process in accordance with its land referencing methodology (as per the Land Referencing Methodology within the **Statement of Reasons** **[PEPD-012]**, to seek to ascertain who owns the land. The Applicant placed a notice on site on 6 April 2023 and maintained this weekly for six weeks requesting for someone to come forward if they believed they owned the land. No responses were received. The Applicant subsequently placed a notice pursuant to Section 56 of the Planning Act 2008 on site between September and November 2023, which the Land Interest refers to having seen. This notice is in accordance with Regulation 8 of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) and Regulation 16 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended), the purpose of which is to provide notice of the acceptance of the application of the **draft Development Consent Order (DCO)** **[PEPD-009]** for examination by the Planning Inspectorate. **Maintenance of Access** As shown in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** the crossing of the onshore cable route is identified within Appendix A under reference TRX-1de-32 as being crossed by open cut method. This means that during construction access to properties located along Kings Lane and Moatfield Lane will be temporarily affected. The strategy to maintain private means of access during this period is described in Paragraph 5.7.10 of the **Outline CoCP** **[PEPD-033]**. The following general principles will apply to the managed or private means of access during the cable route construction: • Any access restrictions or effect on individual properties will be kept to a minimum and the Applicant will work with local stakeholders to develop individual solutions to keep disruptions as slow as is reasonably possible. • All crossings of private means of access will be developed to allow emergency access at all times. • Contractors will be required to accommodate reasonable requests for access during the working day by temporary plating of the trench unless a suitable diversion is provided around the works.

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			• The trench will be plated or temporarily backfilled outside of construction working hours where feasible to restore access, unless a suitable diversion is provided around the works. • Any access restrictions or closures will be communicated to all residents and businesses with affected rights of access. • A nominated point of contact on behalf of the applicant will be communicated to all residents and businesses at least three months before the start of construction. A stage specific Code of Construction Practice will be required to be submitted and approved on a staged basis, in accordance with the **Outline Code of Construction Practice [PEPD-033]**, pursuant to Requirement 22 of the **Draft Development Consent Order [PEPD-009]**. **Traffic Concerns:** For traffic related points please refer to the Applicant's response provided in reference **LI17.1** above and **Table 6-2 'Environment and disturbance'**. **Public Rights of Way:** The matters provided within this Relevant Representation regarding impacts to public rights of way have been responded to by the Applicant in **Table 6-26 'Impacts on Public Rights of Way'**. For Bridleway 1730 (Kings Lane) a temporary closure and diversion will be required during construction works, noting that vehicular access will be maintained as detailed above.

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Table LI59 Applicant's Response to Henry Smethurst [RR-144]

Ref	Relevant representation comment	RLand interest	Applicant's response
LI59.1	I object to the Rampion 2 windfarm and its effects on Oakendene and Cowfold. My main concerns are Traffic and Pollution: Traffic in Cowfold is a big concern for the residents of not only the A272 and the quiet country lanes around the substation site, but for the whole village and the far wider community who use this road on a daily basis. I do not agree with Rampion's methodology for assessing the impact and believe they have significantly downplayed the impacts on congestion, pollution and accident rates. They have not properly understood the way the mini roundabouts in Cowfold alter the flow of traffic, or why looking at only percentage increases in traffic numbers is too simplistic an approach. Local knowledge testimony, and scientific evidence both demonstrate the more likely, far more disruptive, true effect of the proposed vehicle movements. The traffic movements will affect the AQMA in Cowfold to a far greater extent than they suggest. The impact on the tiny lanes of Kent Street and Moatfield lane will create an unacceptable level of misery for the residents for the duration of the construction, and also for those on Picts Lane and Bulls Lane to the north. The economic effects of the traffic have also been underestimated. No Traffic Impact Assessment has been carried out for Kent Street. This is not reasonable, given the extent to which it will be used, and the fact that the impact assessment on other lanes such as Wineham Lane was used to exclude the Wineham Lane substation sites from consideration. Rampion have failed to adequately consider or have played down, both the health and social impacts of the traffic, and the alternatives. Wineham Lane was widened in the 1960s for the construction of the main substation site. No concerns were raised in the relevant representations for Rampion 1 regarding traffic on A272 at the Wineham Lane turning. Noise, air pollution, quality of life and access to health care will also be affected. Economy: Rampion have significantly downplayed, or indeed hardly considered the economic impact of the construction traffic on the economy of Cowfold and wider community. Neither have they weighed this in the balance when choosing the site. Rather, they have focussed on the largely tourist economy of the South Downs and Coastal areas. There are 130 businesses in Cowfold which could be negatively affected by the additional congestion, loss of business, delayed deliveries, and diversions using adjacent lanes. From a wider perspective, over 18,500 road users would be severely inconvenienced by sitting in unnecessary queues as they approach the village of Cowfold every day. The loss of productivity, delays in receiving supplies and loss of business as people are put off from visiting as a result of the traffic congestion, could be catastrophic. The Oakendene industrial estate is a significant provider of rural employment in this area, yet it faces extinction as a result of the traffic delays and construction compounds required to be navigated in order to access it. I believe that the economic impacts, which will result from the choice of this substation site, would be far more serious than at the alternative locations. Ecology: The ecological, economic and social impacts of the proposals have been significantly downplayed or ignored by the Applicant. NPS EN-3 section 3.8.16: "where development affecting irreplaceable habitats requires the benefits (including need) to clearly outweigh the harm." The area of the northern end of the cable route approach and exit form Oakendene are just such irreplaceable habitats and the risks do not justify the benefits, as reasonable alternative locations exist. EN-1 section 5.4.2 recognises the importance of the government's policy for biodiversity as set out in the Environmental Improvement Plan, Biodiversity 2020 and	N/A	The Applicant notes the issues raised in this relevant representation. All matters provided within the Relevant Representations have been addressed below. **Context** The Applicant believes that Henry Smethurst may be an occupier of a title owned by Meera and Jeremy Smethurst (see the Applicant's response to relevant representation **LI21** above). The title referred to above borders an A road (the A272) which is adopted highway. The Applicant identified the owner of the aforementioned title (Jeremy and Meera Smethurst) as a presumed owner of part width of the subsoil of that highway comprising plot 33/19 (which is unregistered) as shown coloured blue on the **Land Plans Onshore – Revision B [PEPD-003]**. This party is not currently in the Book of Reference or Land Rights Tracker. It is not clear if the party has an interest in land. The Applicant will write to the party to seek clarification of the interest in land. In the event that the party does have a qualifying land interest it is understood that this would be in relation to an assumed subsoil interest in plot 33/19 which is adopted highway. This Relevant Representation response proceeds below on this basis (see below). Plot 33/19 is included within the Order Limits for both construction and operational access (Works No.14) to the Oakendene substation and therefore a package of Construction and Operational Access Rights is proposed to be compulsorily acquired over this Plot. Those rights are defined in Schedule 7 to the **draft Development Consent Order (DCO) [PEPD-009]**. **Consultation and Engagement** Chapter 6 of the **Consultation Report [APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. Environmental impact matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-2 'Environment and disturbance'**. Further details are provided below. Route alternatives and sifting matters provided within this Relevant Representations have been responded to by the Applicant in **Table 6-4 'Route / Alternatives'**. Further information regarding matters relating to the Oakendene Substation alternatives have been responded to by the Applicant in **6-20 'Design and siting of the onshore substation at Oakendene'.** The Applicant has provided further information on the

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Ref	Relevant representation comment	RLand interest	Applicant's response
	the National Pollinator strategy whose aim is to halt biodiversity loss, support healthy well-functioning ecosystems and to establish coherent ecological networks, more resilient and adaptable to climate change effects. Rampion's proposals are in direct conflict with these aims by the choice of substation location, and, in line with the mitigation hierarchy, (section 5.4.42), cannot be justified as less-damaging options exist. Instead of making the wildlife more adaptable to climate change, they in fact reduce their resilience to change by causing irreparable damage to species, habitats and connectivity. Although the area is undesignated, its habitats and species are of such significance, as we watch the biodiversity decline elsewhere across the nation, that they should be protected, and that alternative, less damaging cable route and substation sites exist which could provide the necessary infrastructure without significant delay. Landscape, visual and heritage: Rampion have consistently underestimated the landscape and visual impacts of the substation and the damage to heritage sites including Grade 2 listed buildings, including the context in which they sit within the landscape. They have not paid proper attention to the heritage aspects of the landscape itself, nor of the part that it plays in the ecological importance of the area. They have consistently failed to include many of the nearest properties when assessing visual impacts, noise, lighting or any other impacts and therefore their claims do not give an accurate picture of the truth. The Design and Access Statement (doc ref 5.8) now recognises the existence of a PRoW (no 1786) through the site and the grim impact there will be on this much-loved PRoW from Taintfield wood and around the lake. Also, the heritage impact on Oakendene Manor. They also now recognise the extent of the flooding on this site. None of this was taken into consideration when looking at the 'engineering constraints' which informed their choice of substation location. Reasonable Alternatives: Rampion have not properly considered the alternatives. As part of the development falls within the SDNP, Rampion must consider the alternatives (NPS EN-1, section 5.10.31). Further, the Secretary of State should be guided by whether there is a realistic prospect of the alternative delivering the same infrastructure capacity, including energy security, climate change and other environmental benefits, in the same timescale (section 4.2.22). There are suitable alternative substation sites which can be used in the same time frame or potentially less (there being 5km less cable route and no floodplain to negotiate.) and which are far less damaging ecologically and to communities. There is also good evidence that they did not consider this before choosing the site. They admit that they have only a marginal preference for the Oakendene site. I believe that when the additional factors are weighed in the balance, the balance is no longer in favour of using Oakendene Finally, there is widespread concern about the cumulative impacts of this, the Kent Street battery storage farm proposals and Cobwood solar farm. Also, the proposals have materially changed from those consulted on: • The plans for Kent Street have gone from recognising that it is ' a single track lane unsuitable for HGVs' during the informal consultation and the first round consultation , to now expecting it to bear the significant burden of avoiding the AQMA in Cowfold • Extended use ofthe western compound • The complicated traffic movements now proposed • The numbers of HGVs and LGVs now to be involved has increased several -fold. • AQMA- it is now apparent that there will, even with the use of Kent Street, be considerable construction traffic going through Cowfold, yet from FOI requests to the Parish Council it is clear that they believed they had been given assurances before the first consultation, that NO site traffic would		decision to discount the Wineham Lane North site for the onshore substation (see Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (Document reference 8.25) (submitted at Examination Deadline 1). **Traffic:** For points on A722, Cowfold, Kent Street and Moaftfield Lane please refer to the Applicant's response provided to reference **LI17.1** above**.** The Applicant can also confirm that Picts Lane and Bulls Lane are not permitted construction traffic routes for the Proposed Development as defined within the **Outline Construction Traffic Management Plan (CTMP)** **[PEDP-035a]**. **Air Quality:** Impacts from road traffic emissions at sensitive receptor locations within Cowfold, and Cowfold AQMA specifically, have been assessed and are reported within the **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]**. The air dispersion traffic modelling used traffic data based on annual peak daily traffic, rather the annual average daily traffic stipulated in the Defra guidance. Therefore, the completed assessment was highly conservative. Impacts from emissions of NO_2, PM_{10} and $PM_{2.5}$ were considered. The assessment concluded that the impact from construction traffic emissions is negligible at all sensitive receptor locations, including residential receptors within the AQMA. Route alternatives and sifting matters provided within this Relevant Representations have been responded to by the Applicant in **Table 6-4 'Route / Alternatives'**. Further information regarding matters relating to the Oakendene Substation provided within this Relevant Representation have been addressed in Matters relating to the Oakendene Substation raised within this Relevant Representation have been responded to by the Applicant in **Table 6-20 'Design and siting of the onshore substation at Oakendene'**. **Noise:** **Chapter 21: Noise and vibration, Volume 2** of the ES **[APP-062]** does consider traffic on both Wineham Lane and the A272 at this junction. Table 21-35 "Noise predictions 10m from construction traffic routes" assessed the noise change due to construction traffic at "A272 West of A23" and "Wineham Lane, South of A272". The 1.1dB and 2.4dB predicted increase in traffic noise generation, when taken in combination with the change in traffic proportions of an increase in HGVs relative to light vehicles (cars and vans etc) along the road, will likely result in a noticeable increase in noise. However, despite this being a potentially audible increase, when assessed against the standard methodology, this is considered a "Low" impact and not significant. **Health:**

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Ref	Relevant representation comment	RLand interest	Applicant's response
	pass through the village. This may explain their apparent decision not to oppose the proposals. I would like to see these topics taken forward as part of a Principal Issue in the Examination. I would also ask you to hold a topic-specific hearing at the Village Hall in Cowfold to properly examine the consequences of the proposed substation and its impact on Cowfold, its community, businesses and environment. I hope that the Examining Authority will allow local knowledge testimony at the hearings. I also ask that the Examining Authority conduct a site visit to Oakendene and Cowfold to properly understand these issues.		Chapter 28: Population and human health, Volume 2 of the ES **[APP-069]** draws from and builds upon key outputs from Chapter 23: Transport , Volume 2 of the ES **[APP-064]** Traffic and transport to establish the potential health and wellbeing impacts associated with changes in transport nature and flow rate during construction of the proposed development. The potential impact on health and wellbeing is also considered in the context of changes in noise and air quality from traffic during construction. Operational traffic is not substantial; as a result, the potential health impacts from operational traffic was scoped out. Construction of the onshore elements of the proposed development would be temporary in nature. Construction of the onshore cable specifically would be transient, where works would not impact the same receptor for any substantial length of time. Changes in air quality and noise from construction traffic is minimal at all receptors and would not be sufficient in concentration, exposure or duration to result in any material change in population health or wellbeing. An assessment of severance during construction has also been undertaken within Environmental Statement Chapter 23: Traffic and transport, Volume 2 of the ES **[APP-064**] and Chapter 32: ES Addendum, Volume **2** of the ES **(Document reference 6.2.32)** which considers the separation of people from places and other people and places or the impediment of pedestrian access to essential facilities, such as healthcare facilities. This concluded that the Proposed Development would not generate any significant effects in relation to traffic and transport within the centre of Cowfold. The only road link experiencing an increase in HGVs of more than 30% (the screening criteria for potential severance impacts) is Link 26 – Wineham Lane, South of the A272. However, this road link has a very low baseline of HGVs meaning that even a small increase in absolute terms of 12 two-way HGVs per day leads to a high percentage impact. Taking this context into consideration, the potential impact on access to healthcare facilities is not significant. While "quality of life" is not a term which was used in Chapter 28: Population and human health, Volume 2 of the ES **[APP-069]**, potential impacts on quality of life have been considered through the assessment of traffic impacts on pedestrian amenity, delay and fear and intimidation. The changes in traffic nature and flow rate on the majority of road links assessed are not considered to be perceptible to pedestrians. As previously stated, Link 26 has a very low baseline of HGVs meaning that even a small increase in absolute terms leads to a high percentage impact; combined with the lack of pedestrian infrastructure and desire lines on Link 26, there would be no adverse impact on pedestrian amenity, delay and fear and intimidation (factors which influence quality of life). Ecology: The term irreplaceable habitats is used with regards planning policy and legislation. Irreplaceable habitats are noted in paragraphs 5.4.14 and 5.4.15 of the Overarching National Policy Statement for Energy (NPS EN-1) as ancient woodland, ancient trees, veteran trees, blanket bog, limestone pavement, coastal sand dunes, spartina salt marsh swards, mediterranean saltmarsh scrub and lowland fen. This list of

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Ref	Relevant representation comment	RLand interest	Applicant's response
			habitats also accords with the Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024. LVIA: The landscape and visual effects of the Oakendene substation are assessed in **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**. Significant landscape and visual effects are assessed as affecting the local landscape character and landscape elements (mature trees, hedges) and the views from the A272, and PRoW including PRoW 1786. **Appendix 18.5: Residential Visual Amenity Assessment, Volume 4** of the ES **[APP-171]**. Identifies significant visual effects on the views from Oakendene Manor and Coopers Cottage. Heritage: A scoping exercise was undertaken to establish which heritage assets should be scoped into the assessment. The methodology used and results of this exercise are provided in **Appendix 25.7: Settings assessment scoping report, Volume 4** of the ES **[APP-213]**. Listed buildings within Cowfold and Cowfold Conservation Area were considered at this scoping stage. Changes to setting of these assets and the potential effects on their heritage significance was considered, which included the perception of construction traffic is acknowledged in the rationale for this scoping exercise, where relevant. The assessment methodology used to determine effects on heritage assets, is described in in **Chapter 25: Historic Environment, Volume 2** of the ES **[PEPD-020]** and is in line with relevant policy and guidance. This takes into account the existing baseline information and setting of each asset, and what change might be introduced as a result of Rampion 2. Effects on the historic landscape was assessed **Chapter 25: Historic Environment, Volume 2** of the ES **[PEPD-020]**. A historic landscape assessment of the historic parkland at Oakendene was undertaken, which is presented in **Appendix 25.5: Oakendene parkland: historic landscape assessment, Volume 4** of the ES **[APP-211]**. This exercise informed the design process and the assessment of effects on Oakendene Manor and historic parkland presented in **Chapter 25: Historic Environment, Volume 2** of the ES **[PEPD-020]**. The potential for effects on heritage assets was taken into consideration at the optioneering stage and throughout the design process. The matters provided within this Relevant Representation regarding impacts to public rights of way have been addressed in further detail within **Table 6.26 'Impacts on Public Rights of Way'**.

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Table LI60 Applicant's Response to John O'Rourke [RR-177]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI60.1	The amount of my land that is included as part of the DCO application	051	**Context** The Applicant understands that the Affected Party is objecting to the amount of their land included within the Order Limits. Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 34 of the **Onshore Works Plans – Revision B [PEPD-005]**. The Land Interest owns pasture land (arranged as two fields currently used for grazing/ haylage) affected by the proposed onshore connection works (Works No. 19), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. The pasture land affected by Works No. 19 comprises Plot 34/16 as shown coloured blue within the **Land Plans Onshore – Revision B [PEPD-003]**. The landholding is located to the north of the existing Bolney substation and was initially included within scope as a potential substation location. Following consultation, the Oakendene substation location was chosen, meaning the Land interest's title was discounted as a proposed substation location in July 2022. However, the entire title remained within the Order Limits given the proposed cable route still needed to pass through the land from the onshore connection cable to the Bolney substation. **Connection to Bolney Substation** The Land Interest's title is located adjacent to the proposed substation connection point. As detailed within email correspondence from October 2023, the boundary has not been narrowed at this stage due to a number of constraints and uncertainties that relate to the land, including NGET facilitation works.

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Table LI61 Applicant's Response to Linda Saberi [RR-199]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI61.1	I am a caravan owner on the site at [REDACTED] Brookside is an oasis of peace and quiet from busy city life which as caravan owners we enjoy our time relaxing there. The proposed works will have a great impact on our park and will result in a devaluation of our caravans should we wish to sell in the future. Noise and dust pollution. Concerns around heavy vehicles and plant and machinery affecting caravans backing onto the north field. Disturbance to local wildlife. A284 road already very busy and tail backs occur, especially when level crossing is down. Access from the public road (A284) at the proposed location is too narrow for lorries to turn or reverse into.	N/A	The Applicant notes the Interested Party is an occupant of the Brookside Caravan Park on an annual licence agreement basis. The Applicant therefore does not believe the Interested Party has an interest in land. In the unlikely event that they have a sufficient land interest which is capable of being the subject to a Section 10 injurious affection claim for diminution in value of the land interest as a result of the works, they may be able to bring a compensation claim in due course, to be assessed in accordance with the Compulsory Purchase Compensation Code. For the avoidance of doubt, a caravan is an asset and does not represent a compensable interest in land for these purposes. The Applicant notes the issues raised in this relevant representation. All environmental matters provided within this Relevant Representations have been responded to by the Applicant in **Table 6-4 'Brookside Caravan Park'**.

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Table LI62 NOT IN USE

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Table LI63 Applicant's Response to Stephen Christopher Turner [RR-362]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI63.1	This will be an unwelcome intrusion into farming life, affecting a lot of land owners unnecessarily who already face many difficulties in the current climate. Difficult to understand why land adjacent to the original cable cannot be used again?	052	The Applicant notes the issues raised in this relevant representation. **Context** Details of the construction access as it passes through the Land Interest's land holding are shown on Sheet 21 of the **Onshore Works Plans – Revision B [PEPD-005]**. The Land Interest owns the freehold of Plot 21/19 (as shown coloured green on the **Land Plans Onshore – Revision B [PEPD-003]**. The pasture field is currently used for grazing and the Applicant proposes to use the western edge of the field as a temporary construction access (Works No. 13 – Temporary construction access), for which temporary rights are sought to access the cable installation area to the south. In addition, the Land Interest has access rights over Barns Farm Lane, a private road (Plot 21/7), which the applicant proposes to use as an operational access (Works No. 15). **Voluntary Agreement** The Applicant has been in regular correspondence with the Land Interest and their agent since April 2022. The Applicant acknowledges the impact of the project on farming activities and has issued Heads of Terms in December 2023 in respect of the proposed construction access. The Applicant has received feedback from the Land Interest regarding the offer and will respond in due course. As the project progresses to the point of entry being taken for construction, the Applicant is keen to have ongoing discussions with the Land Interest to understand how best to mitigate any temporary severance of land, which can include temporary accommodation works (e.g. fences, gates and crossing points). The pasture land is part of a larger field/ land holding which is outside of the Order Limits. The Applicant understands that access to the field is from the west and would involve crossing over the proposed construction access. The Applicant will continue to engage further to understand the Land Interest's specific requirements to accommodate the grazing/ land management operations and minimise disturbance wherever possible. This could include crossing points to be agreed with the Land Interest across the construction access. **Rampion 1 Cable Route** The Applicant notes the query of why the cable for the existing Rampion Offshore Wind Farm (Rampion 1) cannot be used. This is addressed in paragraph 3.4.18 of the **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**: "It was concluded that it is not technically feasible to follow the original Rampion 1 onshore cable route as additional infrastructure cannot be physically accommodated at the Brooklands and due to environmental constraints at Tottington Mount (see Table 3-5). The option was therefore not a reasonable alternative."

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Table LI64 Applicant's Response to Andrew and Gillian Bridges [RR-014]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI64.1	We purchased No [REDACTED] earlier this year. Not only as a haven from our busy work life but also to rent out to prospective holiday makers. The proposed works will shatter the peace and tranquility of the plot. There will also be dust and dirt as well as noise very close to our particular van. Not to mention the negative impact on the wildlife. This site is a beautiful setting and we are outraged at the proposal. We insist that you reconsider.	N/A	The Interested Party's relevant representation does not identify where their holiday caravan is. In the circumstances, The Applicant reserves its ability to comment further if necessary in due course. In the event that the holiday home is situated at Brookside Carvan Park, the Applicant notes the issues raised in this relevant representation. All environmental matters provided within this Relevant Representations have been responded to by the Applicant in **Table 6-4 'Brookside Caravan Park'**.

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Table LI65 Applicant's Response to Andrew Porter [RR-017]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI65.1	In regard to DCO EN010117, I object to the adoption of the Oakendene site for Rampion 2's proposed substation, and related cable route, on the following grounds: > inadequate exploration and assessment of alternative sites > incomplete consultation on multiple aspects of the proposal The exploration and assessment of alternative sites has failed the public interest in the following ways: 1) No credible comparison of the environmental impacts of the two substation options was completed prior to Rampion's decision to choose Oakendene, with some surveys only being completed at the point of DCO submission. Given the Oakendene option requires a 5 kilometre longer cable route the public interest must be assured as to how the additional soil disturbance, tree and hedge loss entails less environmental damage overall. The proposed route bisects 22 established nightingale territories and crosses Priority Habitat (Unimproved Lowland Meadows) so it is not clear that this public interest threshold has been met. 2) The Oakendene proposal relies on Kent Street Lane for construction access for both the substation and cable route despite no Traffic Impact Assessment having been completed for Kent Street Lane. The use of Kent Street Lane for such a significant project is totally inappropriate and was recognised as such by Carter Jonas representatives. It is a restricted width, single track lane with only occasional parking spaces. Ditches close to the lane are hazardous for drivers without local knowledge - a loaded horse lorry ended on its side in a ditch when letting someone pass, fortunately no horses were killed. The lane has high amenity value to dog walkers, cyclists and horse-riders given the low and slow traffic volumes, and qualifies for Quiet Lane status (with support confirmed from our Horsham District Councillor and Cowfold Parish Council). It is used as a connecting route between multiple footpaths and bridleways enjoyed by local residents and visitors. The proposed site access bellmouth on Kent Street will cause a long and permanent scarring of what is a beautiful lane edged with mature oak trees and blackthorn hedging, home to a number of owls and buzzards, regularly seen flying over the lane. Yet no consideration was given to an alternative 70 acre parcel of land (just to the east), recently marketed for sale, which has full frontage along the A272 and would not cause the public loss that the use of Kent Street will entail. And likewise there's been no comparable assessment of the amenity loss of using Wineham Lane which supports two lanes of much faster traffic, hence much less amenity use, and has already been used for Rampion 1. The consultation was incomplete in many ways but failed specifically as follows: 1) The cable plan EN010117-000161-2 sheet 32 shows that Kings Lane / Moatfield Lane will be closed by Open Cut cable trench in two places (PROW-1de-47 and PROW-1de-45), despite Carter Jonas confirming by email in Sept 2022 that they had noted on file that the lane serves numerous dwellings and farming activities. There has been no consultation on the lane closure and no mention of it when residents were engaged in a Targeted Consultation in April 2023 requesting operational access along the lane post construction. To be clear, the lane is a cul-de-sac and so represents the only access to the highway for 10 properties. Households require continuous access to the highway, allowing children to attend	053	**Context** Details of the operational access as it passes through this location are shown on Sheet 32 of the **Onshore Works Plans – Revision B [PEPD-005]**. The Land Interest has private rights of access over Kings Lane/ Moatfield Lane, (Plots 32/2, 32/3, 32/4, 32/5, 32/6, 32/11, 32/12/, 32/13 and 32/15) shown coloured blue on the **Land Plans Onshore – Revision B [PEPD-003]**, which provides access to their residential property. **Operational Access** Kings Lane/ Moatfield Lane is within the Order Limits for an operational access (Works No. 15). The Applicant seeks new rights (i.e. operational access rights) over Kings Lane/ Moatfield Lane, for this purpose, but does not propose to acquire the land. The rights sought by the Applicant will be exercised in common with existing private rights of access and will be entirely consistent with the existing use of the land as an access road. No ransom strip is created as the Applicant will not own the road and is not intending to purchase Plot 32/13. Operational Access Rights are defined in Schedule 7 of the **Draft Development Consent Order (DCO) [PEPD-009]** and in summary comprise rights of access with or without vehicles and equipment: *for the purposes of operation, maintenance and decommissioning of the authorised development*". The rights are expanded on further in Schedule 7. Operational access (for light personnel or 4x4 vehicles) will be required throughout the project's lifetime, for inspections and maintenance of the cable route. It is anticipated that the Applicant would need to access the lane by either walking or driving, to carry out occasional maintenance responsibilities. **Cable Installation Works** In addition, Kings Lane/ Moatfield Lane is crossed twice (Plot 32/11 and Plot 32/3) by the proposed cable route (Works No. 9 – Cable installation works (including construction haul road and operational access)), which will involve open-cut trenching installation methodology, and therefore the Cable package of rights and restrictive covenants are sought, as identified in Schedule 7 to the Order. Please see comments regarding maintenance of access below. **Plot 32/13 (Unregistered Land)** The small strip of land (Plot Number 32/13) at the end of Kings Lane, over which the Land Interest has private rights of access, is unregistered. Kings Lane itself (to the west

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	school, workers driving to workplaces, some elderly receiving regular care and medical attention, a farming business including livestock, horses in livery requiring daily access along the lane for exercise on Buckhatch bridleway. It is inconceivable that Rampion would close the lane with two Open Cut trenches rather than using Trenchless crossings. 2) A supplementary Notice of Acceptance of a DCO re. Plot 32/13, to compulsorily acquire land of which ownership is currently unknown, was posted on a sign-post at the top of King's Lane during September 2023 without being included in any stage of consultation. This unnecessary and aggressive move, creating a potential ransom strip at the top of the lane, which threatens lane residents' unconditional right of access to the public highway is unjustified in the public interest and is totally inconsistent with the letter and spirit of the "Planning Act 2008 - Guidance related to procedures for the compulsory acquisition of land" as issued by Department for Communities and Local Govt, Sept 2013. I respectfully request the opportunity to raise these issues directly with the Planning Inspectorate in the relevant meetings.		of Plot 32/13) is a privately owned road. To the east of Plot 32/13 lies Plot 32/14, which is also unregistered, but falls within the adopted highway extent as verified by data provided by West Sussex County Council. The adopted highway then extends onto Kent Street to the east. The freehold ownership of Plots 32/13 and 32/14 is unknown (they are both unregistered on the Land Registry). As Plot 32/13 is unregistered and unadopted, the Applicant followed a process in accordance with its land referencing methodology (as per the Land Referencing Methodology within the **Statement of Reasons** **[PEPD-012]**, to seek to ascertain who owns the land. The Applicant placed a notice on site on 6 April 2023 and maintained this weekly for six weeks requesting for someone to come forward if they believed they owned the land. No responses were received. The Applicant subsequently placed a notice pursuant to Section 56 of the Planning Act 2008 on site between September and November 2023, which the Land Interest refers to having seen. This notice is in accordance with Regulation 8 of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) and Regulation 16 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended), the purpose of which is to provide notice of the acceptance of the application of the Draft **Development Consent Order (DCO)** **[PEPD-009]** for examination by the Planning Inspectorate. **1: Consultation** Kings Lane/ Moatfield Lane was included within the draft Order Limits that was consulted upon in the Highways Consultation in April 2023. Consultation packs were provided at that time to Kings Lane/ Moatfield Lane residents as it was assumed that those dwellings have rights of access across Kings Lane in order to access their land and property. Chapter 6 of the **Consultation Report** **[APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. **1: Environmental Impacts** Matters relating to the Oakendene Substation alternatives raised within this Relevant Representation have been responded to by the Applicant in **Table 6-20 'Design and siting of the onshore substation at Oakendene'**, further information can be found in Appendix 2 **Applicant's Response to Action Points Arising from Issue Specific Hearing 1 (Document reference 8.25)** (submitted at Deadline 1). Matters relating to the Oakendene Substation alternatives raised within this Relevant Representation have been responded to by the Applicant in **Table 6-20 'Design and siting of the onshore substation at Oakendene'**, further information can be found in Appendix 2 **Applicant's**

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			Response to Action Points Arising from Issue Specific Hearing 1 (Document reference 8.25) (submitted at Examination Deadline 1). **2: Traffic Impacts along Kent Street** Kent Street will be used as a construction traffic route to accesses A-61 and A-64 as shown on Figure 7.6.4d. It should be noted that both access A-61 and A-64 are located north of residential properties on Kent Street and therefore construction traffic will not route past these properties. This reflects commitment C-157 (**Commitment Register** **[APP-254]**) which states that HGVs should avoid smaller settlements where possible, the prescribed local access routes defined in Table 5-1 of the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** and the mitigation identified to avoid the use of small single-track roads as much as possible as defined in Table 5-2 of the **Outline CTMP** **[PEPD-035a]**. Given the single lane track nature of Kent Street, the Applicant is currently reviewing options for the implementation of traffic management along Kent Street and accesses A-61 and A-64 to provide safe access for construction and general traffic. This may involve measures such the implementation of a speed limit reduction, passing places, or managed access via banksmen. The outcomes of this review will be discussed with West Sussex County Council at the earliest opportunity with the aim of reaching an agreement in principle to the traffic management strategy. This would then be secured through a detailed CTMP for the stage of the authorised development comprising Kent Street which will be required to be submitted and approved by the highways authority before commencement within that stage in accordance with requirement 24(1)(a) of the **Draft Development Consent Order (DCO)** **[PEPD-009]**. Matters relating to the Oakendene Substation raised within this Relevant Representation have been responded to by the Applicant in **Table 6.20 'Design and siting of the onshore substation at Oakendene'**. Further information can be found in Appendix 2 **Applicant's Response to Action Points Arising from Issue Specific Hearing 1 (Document reference 8.25)** (submitted at Deadline 1). Terrestrial ecology and nature conservation matters raised within this Relevant Representation have been covered in **Table 6-2 'Environment and disturbance',** with further information provided in the **Table 6-3 'Ecology'**. For further detail on Ecology surveys undertaken, please see **Appendices 22.3 to 22.16 Letter to Mr Dickson 18.05.23**.

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			As part of the DCO process a thorough assessment of the likely impact of traffic upon the local road network and highway assets during the construction phase of works has been completed. Construction accesses have been observed and presented in the **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**. Further information has been responded to by the Applicant in **Table 6-2 'Environment and disturbance'** with further information provided in the **Table 6-1 'Traffic'**. Paragraphs 23.4.21 and 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** describe the expected operational and maintenance phase activities, which Kings Lane and Moatfield Lane will be used for, which includes periodic testing of the cable through attendance by up to three light vehicles such as vans in a day at any one location. Unscheduled maintenance or emergency repair visits for the onshore cable will typically involve a very small number of vehicles, typically light vans. Infrequently, equipment may be required to be replaced, then the use of an occasional HGV may be utilised, depending on the nature of the repair. **4: Maintenance of Access** Mindful of residents' concerns, the Applicant updated the **Outline Code of Construction Practice (CoCP) [PEPD-033]** at the pre-examination deadline. Additional detail has been provided at Section 5.7.10 to explain how construction and access will be managed. In summary: • Access restrictions will be kept to a minimum, with a diversion provided if possible; • Contractors will work with local stakeholders and accommodate reasonable requests for access; • The trench will be covered outside of working hours, and access will be restored in emergencies; and • Closures will be communicated to local residents in advance. **Definition of Kings Lane/ Moatfield Lane within the Book of Reference** The Applicant accepts that Kings Lane/ Moatfield Lane is a private road which also has a public bridleway and public footpath running along parts of it. As detailed within the **Book of Reference [APP-026]**, the DCO allows for the 'Acquisition of New Rights or the Imposition of Restrictive Covenants over... land being private road, verge (Kings Lane), public bridleway (COW/1730/3), public footpath (COW/1783/1). **Bridleway**

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			The DCO seeks to temporarily close the bridleway 1730 across the cable corridor for which a diversion will be in place between points 50a and 50b. As mentioned above, the private road access will not be diverted. The Applicant is mindful there may be some temporary disruption during construction. However, during the operational phase, access rights along the lane will be unaffected, and the Applicant's rights will be exercised in common with other private rights.

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Table LI66 Applicant's Response to Savills UK Ltd (Savills UK Ltd) on behalf of Angmering Park Farms LLP, The Angmering Park Estate Trust, (Angmering Park Farms LLP, The Angmering Park Estate Trust) [RR-022]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI66.1	Dear Sirs RE: The Duke of Norfolk, Angmering Park Farms LLP, Trustees of The Bernard 16th Duke of Norfolk's 1958 Settlement Reserve Fund, Trustees of The Angmering Park Estate Trust, The Personal Executors of Lady Sarah Margaret Clutton Rampion 2 Offshore Windfarm – Development Consent Order I write in regard to the application for a development consent order and compulsory purchase order relating to the Rampion 2 Offshore Wind Farm which was submitted by Rampion Extension Development Limited on 10 August 2023. Savills are instructed by the Duke of Norfolk, beneficial owner of the Arundel Estate and the Trustees of various Trusts as set out above. Unfortunately, and despite our best efforts, we seem to be at an impasse with Carter Jonas (CJ) who are the agents acting on behalf of the Rampion 2 project. Indeed, we would suggest that no real progress nor meaningful negotiation has now been made for several months. The main issues with how this project is being dealt with (amongst many others) are that: My clients are not being offered reasonable compensation terms and when we have tried to negotiate fair terms (as would normally happen in such matters) we have been met with blanket resistance, it seems to us that CJ have no intention of altering or improving their initial offer. For example, we have tried to negotiate land values with CJ and they have thus far refused to move on this and have disregarded any valid comparisons to recent, similar large infrastructure projects such as Rampion 1, and the Esso pipeline project. My client's concerns are not being listened to and taken on board and the lines of communication of The Rampion project team and their consultants are confusing and misleading. For example, alternative routes have been proposed, but have not been properly evaluated by RWE and their agents and where they have been adopted there are still significant information gaps around the development giving rise to concern about various estate enterprises and businesses. Emails and requests for information have remained unanswered, such as the locations of permanent manhole access points and associated access rights required through extended private routes through the estate which will cover some significant distance from the nearest public highway. Some areas of the route corridor through the estate are extensive, far wider than the standard construction corridor, which could threaten the nationally significant conservation project know as the 'The Peppering Project', further detailed discussion may mitigate these concerns but thus far this has not occurred. Insufficient information has been provided to us / our clients for them to be able to make an informed decision as to whether or not to sign the Key Terms that have been issued by CJ and when we have asked for more information or greater explanation,	054	**Context** The Land Interest owns a mixture of arable, pasture land as well as woodland which is affected by the cable route (Plots 7/23, 7/25, 8/2, 8/3, 8/4, 10/1, 10/2, 10/4, 10/4, 11/1, 11/2, 11/3, 11/6, 13/1, 13/5, 14/1 & 14/3) over which a package of Cable Rights and a Cable Restrictive Covenant is sought for the construction, operation, maintenance and protections of the cable, as defined in Schedule 7 to the **draft Development Consent Order [PEPD-009]**. There are several estate roads / tracks owned by the Land Interest (Plots 7/25, 7/26, 7/28, 9/1, 9/2, 9/3 10/5, 10/6, 11/11 11/12, 11/13, 12/1, 12/4, 13/6, & 14/2) which are affected by a proposed operational access for which Operational Access Rights are sought. In addition, there are also several estate roads / tracks owned by the Land Interest (Plots 7/8, 7/9, 7/10, 7/11, 7/22, 11/14, 11/15, 12/2, 12/3, 12/6, 12/7, 12/8, 12/10 & 12/11) which are affected by a proposed temporary construction access for which Construction Access Rights are sought. Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheets 7,8, 10, 11, 13 & 14 of the **Onshore Works Plans – Revision B [PEPD-005]**. **Consultation and Engagement** There has been significant engagement with Angmering Park Farms LLP representatives since the first meeting with the land interest on 9th March 2021. Written consultation responses were received from Angmering Park Farms in Summer 2021, which raised concerns surrounding impacts on agri-environmental projects "The Peppering Project" and "curlew release project". Minutes from a meeting on 25th May 2022 between the land interest and the Applicant recorded that the Land Interest expressed its agreement to collaborate with the Applicant if a way could be found to the construct the cable route around the Peppering and Curlew projects. Alternative cable routes proposed by Angmering Park Farms and other prescribed consultee consultation responses led to detailed discussions with the land interest in the context of the agri-environmental projects and land uses as recorded in a letter dated 18th July 22. A series of design reviews of the cable route was subsequently carried out and following these reviews, a consultation exercise presenting 3 new 'longer alternative cable routes" and other less substantive proposed modifications to the cable route commenced in October 2022. The alternative routes presented would avoid a water source protection zone and a local nature reserve potentially affected by the original PEIR cable route, as wells as address the concerns of the Land Interest. Responses to the October 2022 Statutory Consultation from other land users and businesses were assessed and together with further environmental and engineering

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	none has been forthcoming. For example, myself and the other agents acting for landowners along the route requested copies of the draft legal agreements so we could fully advise our clients. These have only recently been provided to some clients and demonstrate that the Key Terms document produced by CJ was insufficient, lacked detail and could not be signed and would have resulted in protracted or abortive negotiations with solicitors. The Rampion 2 project team are not willing to cover the cost of landowners' proper and reasonable professional fees, this has been apparent at the consultation stage and remains a concern as we enter negotiation of the Key Terms. There seems to be a disjointed approach to how landowners and agents are being informed of matters and a consistent lack of detail. Whilst my clients and I will continue to engage with RWE and CJ in order to try and achieve the best outcomes for the affected land, we felt we must make a representation to you so that you aware of the poor engagement and lack of detailed meaningful consultation that has thus far taken place between the Rampion 2 project and our client. Yours faithfully Guy Streeter MRICS FAAV Director RICS Registered Valuer		work led to the consideration of a further additional cable route. This longer alternative cable route "LACR1d" was subject to a Targeted Consultation in February.2023. A meeting was held with the Land Interest, his agent and the Applicant's project team on 31st January 2023 to inform the Land Interest of the pending further consultation. The Applicant's meeting minutes record the Land Interest had no objection to the revised route at this time as it responded to the concerns and issues raised by the Land Interest by pushing the cable route as far east as possible. A meeting was held on 18th May 2023 to update the Land interest on the Proposed Project further to the targeted consultation. At that meeting it is understood that a mutual agreement to work towards a land agreement was made between the Applicant and the Land interest. In summary, amendments were made to a large section of the route in the vicinity of Angmering Park Farms. These amendments have resulted in fewer environmental and land use impacts on land forming part of Angmering Park Estate for this section of the cable route. The statement that alternative routes have not been properly evaluated is not correct. Extensive evaluation took place according with the methodology set out in the Section 3.4 of the **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**. Further to the issuing of updated cable route plans in April 2023, a meeting at Angmering Estates offices was held to communicate updates to the cable route with the Angmering Estate's retained land agent and wider estate management team. **Consideration of Alternatives and consideration of the 'Peppering Project'** **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** details how the design of the Proposed Development has evolved and demonstrates that all aspects of site selection, site access and future access requirements have been incorporated into the design of the Proposed Development to minimise and mitigate adverse impacts. The chapter explains the reasonable alternatives considered for the onshore cable corridor and the reasons for selection of the preferred option. Paragraphs 3.4.41 to 3.4.47 of the **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** detail the alternative Longer Alternative Cable Routes (LACRs) presented at the second Statutory Consultation (Oct to Nov 2022), which include the narrative confirming the consideration of the referenced agri-environment scheme ('The Peppering Project'). Paragraphs 3.4.60 to 3.4.70 of the **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** detail the preferred options chosen following Statutory Consultation exercises. Paragraph 3.4.66 of the **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** details the primary considerations for LACRs which was subject to further analysis following the outcome of the third Statutory Consultation exercise. This presence of a release project for curlew (listed as Near Threatened in the IUCN Red List of Threatened Species) centred on Harrow Hill, and the funded enlargement of the large

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			scale and long running agri-environmental scheme which supports Species of Principle Importance were all considered. Multiple consultation responses were received from statutory bodies and non-statutory bodies citing that these areas should be avoided. The chosen option largely avoids the agri-environmental scheme (including all of the area that has been established for some time) to avoid effects on notable birds, such as grey partridge. **Land Agreement related matters** The Applicant issued Heads of Terms to the Land Interest in July 2023. The Applicant emailed the Land Interest's agent in August 2023 for a response / acknowledgement of receipt of the Heads of Terms. The Applicant issued the draft Option Agreement and draft Deed of Grant for an Easement to the Land Interest's agent in October 2023 (and had not having received any response during this time). The Applicant met with the Land Interest and the Land Interest's agent in October 2023 to seek to instigate the negotiations of the Heads of Terms. The Applicant has made an offer on the basis of evidenced land value. The Applicant has not received a counter-offer or alternative land values in relation to compensation terms from the Land Interest's agent the Applicant would be willing to enter into discussions about this. During the meeting on 27th October 2023 the Applicant outlined the area in the Estate where the DCO boundary was wider than the standard construction corridor width of 40m and explained that until ground investigation works have been undertaken the Applicant will not know where the final cable route design will go and has allowed a larger area to incorporate flexibility within the final cable route design. The completed project and land easement would occupy a smaller portion of the indicated DCO boundary area of c20m, and the draft Order and easement terms reflect this. The Applicant had an on-line video call with the Land Interest's agent on 15th December 2023 whereby the associated access rights required through the estate were discussed and reviewed. The Applicant had submitted all the follow-up information to the Land Interest and the Land Interest's agent as requested in the October 2023 meeting at the start of December 2023. None of the proposed access routes (construction or operational) through the estate will have any impact on "The Peppering Project". The Applicant is still waiting for a detailed response from the Land Interest's agent in relation to comments on the draft Option Agreement and draft Deed of Grant for an Easement as well as any further information in relation to counter-offers and or alternative land values.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			At the meeting in October 2023, the Applicant confirmed that reasonably incurred professional fees will be reimbursed, on the provision of an accompanying timesheet to any fee account.

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Table LI67 Applicant's Response to Brian Conrad Whiting [RR-044]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI67.1	Wind turbines to close to my caravan [just over hedge] to noisy and will disturb local wild life	N/A	The Interested Party's relevant representation does not identify where their holiday caravan is. In the circumstances, the Applicant reserves its ability to comment further if necessary in due course. In the event that the holiday home is situated at Brookside Carvan Park, the Applicant notes the issues raised in this relevant representation. All environmental matters provided within this Relevant Representations have been responded to by the Applicant in **Table 6-4 'Brookside Caravan Park'**.

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Table LI68 Applicant's Response to Christopher John Waller [RR-066]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI68.1	I am concerned about the proposal for a new substation on the A272/Kent Street. The A272 is always busy and difficult to join or cross from Kent Street. Additional traffic would increase the risk of accidents. Kent Street is quiet and peaceful itself and is not fit for construction traffic as it is a single track country lane, which is already subsiding. Visually a new substation would detract from the beauty of the surrounding countryside, which has an abundance of wildlife, trees and plants. The proposed underground cable route would impact on half of the fields on my farm and make access to the others difficult for regular maintenance. The farm has been in my family for over 100 years and the fields have never been ploughed or disturbed so the hay is full of natural herbs. It is surrounded by oak trees which have taken years to mature and it would be a tragedy if these were felled during construction.	056	**Context** Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 32 of the **Onshore Works Plans – Revision B [PEPD-005]**. The Land interest owns a residential property with pasture land (currently used for haylage and grazing) to the west of Kent Street. The pasture land is affected by the proposed cable installation works (Works No.9 – Cable Installation works (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive covenant are sought. The area impacted by Works No.9 comprises Plot 32/8 as shown coloured blue on the **Land Plans Onshore – Revision B [PEPD-003]**. In addition, the pasture land is affected by a proposed operational access in two places (Works No 15), for which permanent operational access rights are sought. These comprise Plots 32/9 and 32/10 as shown coloured blue on the **Land Plans Onshore – Revision B [PEPD-003]**. The Applicant notes the issues raised in this relevant representation. Environmental matters provided within the Relevant Representations have been addressed below. Crossing points for farm management purposes will be discussed and agreed with the Land Interest prior to the start of construction. These accesses will facilitate the ongoing use of the land outside of the cable construction corridor for haylage and grazing. **Traffic**: For traffic related points please refer to the Applicant's response provided to reference **LI17.1** above. **Ecology**: Terrestrial ecology and nature conservation receptors relating to the Project have been considered in the **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**. Further information regarding the embedded environmental measures to avoid, prevent or reduce the terrestrial ecology and nature conservation impacts arising during the construction of the Proposed Development are presented in the **Outline Code of Construction Practice (CoCP) [PEPD-033]**. The cable route and substation location in the Kent Street area have been covered by a range of biodiversity surveys with a range of legally protected and notable species identified. The mitigation hierarchy has been implemented to firstly avoid (for example veteran trees in the area), minimise (reduce hedgerow losses where possible), mitigate (advanced planting of alternative habitat for dormouse and compensate (through habitat creation around the proposed substation) in this area. This is demonstrated within the **Outline Code of Construction Practice (CoCP) [PEPD-033]** and **Outline Landscape and Ecology Management Plan** [**APP-232**].

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Table LI69 Applicant's Response to Henry Adams LLP (Henry Adams LLP) on behalf of Claudia Langmead Farming Ltd (Claudia Langmead Farming Ltd) [RR-073]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI69	I am the land agent acting on behalf of Claudia Langmead Farming Ltd, which owns [REDACTED] and is a directly affected claimant. As at 6th November 2023, my client still has not received key terms or conditions about the rights being acquired across the farm. RWE's proposals are being rushed. We therefore object on the basis that we have no idea whether the proposed terms will be acceptable. My client maintains their previous objection to the farm being used for access. This is an active diary farm and therefore cows need to walk to and from the milking parlour at least 4 times per day. The routes to and from the paddocks and the buildings therefore need be left open for extended periods and is incompatible with heavy machinery. Milking cows are very sensitive to noise and disturbances, especially when these disturbances are close to the milking parlour or experienced when being milked. Anything that can startle a cow will risk injury, potentially trigger a herd response, and could endanger other cows, calves or farm staff. It will almost certainly have an impact on the milk yield. These are unacceptable risks. We argue that RWE has not done enough to find alternative routes that do not go through the farm, or so close to the dairy buildings. They could send their equipment via the easement strip, or find an alternative route, and we object on the basis that we are not satisfied that alternative routes have been properly considered. We have bought to the attention of RWE (in previous objections) the significant dangers posed by the access onto the A380. The farm is located at an accident hot-spot and we have drawn RWE's attention to publicly available data that shows the frequency and severity of accidents is uncommonly high at this location. To allow heavy machinery to maneuver at this location seems like an unnecessary risk that should be best avoided. Finally, the access route goes over a sensitive area of pasture. The Muntham Court schedule ancient monument is located in same field,750hilest the route aims To avoid the designation by just 2 or 3 metres, it is still uncomfortably close. The access shall compact the land and will be impossible to reinstate without forever being visible. To summarise, the proposed access route is poor conceived. It has significant consequences for a working dairy farm, a scheduled monument and the safety of road users on the A380. We are without terms for this proposed use and request that suitable alternative routes are considered.	057	**Context** The Land Interest owns pasture land that is proposed to be used for temporary construction access (Plots 16/2, 16/3, 16/4 & 16/5) works no. 13. Details of the temporary construction access as it passes through the Land Interest's land holding are shown on Sheet 16 of the **Onshore Works Plans – Revision B [PEPD-005]**. **Consultation and Engagement** The Applicant issued Heads of Terms to the Land Interest in December 2023. The Applicant met with the Land Interest and the Land Interest's agent following the issuing of the Heads of Terms to review and discuss in more detail (in December 2023). In the meeting in December 2023 the Applicant was able to confirm that the proposed construction access would not have any direct impact on the dairy farm facilities. The proposed construction access runs along the Eastern boundary of the farm, minimising impacts on the land use. The access will also run along the Eastern most boundary of a single field on the farm and thereby avoiding the Muntham Court scheduled monument. Access mitigation measures were discussed, including the installation of a double gate and ensuring any camber on the proposed construction haul road would allow access across. **Accommodation Works** In accordance with the **Outline Code of Construction Practice (CoCP) [PEPD-033]** the stone access route / haul road and working area will be constructed of semi-permeable aggregate material. **Traffic Considerations and Impacts** As part of the DCO process a thorough assessment of the likely impact of traffic upon the local road network and highway assets during the construction phase of works has been completed. Construction accesses have been observed and presented in the **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**. Further information has been responded to by the Applicant in **Table 6-2 'Environment and disturbance'**, with further information provided in the **Table 6**-1 **'Traffic'**. It is assumed by the Applicant that the Relevant Representation should refer to A280 (Long Furlong) rather than A380. The A280 provides access to construction and operation access A-26, operational access A-27 and construction access A-28. The Applicant is currently reviewing traffic management options for the junction of A280 Long Furlong and Michelgrove Lane to facilitate the safe access and egress of construction traffic. These options will take

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account of traffic surveys being undertaken on the A280 Long Furlong and Michelgrove Lane, swept path analysis and visibility splay assessments.

The outcomes of this review will be discussed with West Sussex County Council at the earliest opportunity with the aim of reaching an agreement in principle to the traffic management strategy. This would then be secured through inclusion within an update to the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** which will be certified pursuant to Schedule 16 of the **draft Development Consent Order** **[PEPD-009]**, and a stage specific CTMP secured pursuant to requirement 24 (1) (a).

Environmental and Ecological Constraints

Chapter 25: Historic Environment, Volume 2 of the ES **[PEPD-020]** assesses the effects on the scheduled Muntham Court Romano-British site (NHLE 1005850). There will be no effect during the operational and maintenance phase, and a not significant effect during the construction phase. Where there may be impacts to as yet unknown archaeological remains associated with upgrade and installation works for construction Access-028, commitments C-225 and C-79 in the **Commitments Register** **[APP-254]** (updated at the Examination Deadline 1 submission) provide for mitigation through design and archaeological recording. The **Outline Onshore Written Scheme of Investigation (WSI)** **[APP-231]** sets out the methodological approach for archaeological investigations which ensures further investigation will be undertaken prior to construction. In line with the requirements of NPS EN-1, archaeology at risk of loss or disturbance would be recorded before any loss occurs. This recording would be provided for in a WSI (site-specific, as described in the **Outline Onshore WSI** **[APP-231]**).

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Table LI70 Applicant's Response to Climping Homes (Climping Homes) [RR-074]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI70.1	As the potential residential developer (for circa 300 new homes) of a land parcel that abuts this project's own proposed access point, we would wish to see continuity of design, so as to ensure that traffic can best be accommodated throughout our respective build-programmes.	058	**Context** The Land Interest owns arable land which is proposed to be used for temporary construction access (Plots 2/19 & 2/20) works no. 13. Details of the temporary construction access as it passes through the Land Interest's land holding are shown on Sheet 2 of the **Onshore Works Plans – Revision B [PEPD-005]**. The Land Interest has submitted a planning application (Planning Application No. CM/48/21/RES) for 300 residential units to be built upon Land to the West of Church Lane / South of Horsemere Green Lane, Climping – on the other side of the road – to the Applicant's proposed temporary construction compound (works no.10). As part of the proposed development the Land Interest is obliged under a Section 278 Agreement with West Sussex County Council to construct a new road and roundabout resulting in the southernmost part of Church Lane being downgraded to a public bridleway. The Applicant understands that the new road and roundabout construction will commence in 2024 and is anticipated to be adopted as public highway in 2027. The Applicant therefore will require temporary access to the newly aligned road (upon construction of) to allow construction vehicles to connect to the A259. **Consultation and Engagement** Following the issuing of a Section 42 Notice of the Planning Act 2008t in October 2022, and a Section 56 Notice of the Planning Act 2008 in September 2023 the Applicant had an on-line video call with the Land Interest in 9th November 2023. Both parties outlined their construction proposals and discussed timescales and the likely impacts of each project on each other. It was noted that there is likely to be a cross-over of construction periods for both projects. It was agreed that both parties would arrange to hold regular meetings going forward providing updates on the respective projects / construction timings. The Applicant issued Heads of Terms for temporary construction access to the Land Interest in December 2023. The Applicant is currently reviewing some queries raised by the Land Interest in January 2024 and will respond to the Land Interest shortly.

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Table LI71 Applicant's Response to Henry Adams LLP (Henry Adams LLP) on behalf of Executors of D Bowerman (Executors of D Bowerman) [RR-119]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI71.1	We act on behalf of the executors of D Bowerman, a claimant directly impacted by the cable route. We share the objections made on behalf of other landowners, namely: - We object to RWE seeking the ability to plant trees anywhere on the land. The ES states clearly this is a BNG liability and therefore credits should be purchased in the normal way, or rights acquired to land in the normal way. – We object to RWE seeking to impose costs on the landowner for clearing up any contamination found on the route. There is landfill on the cable route and it's unreasonable to suggest that this will be cleared up at the cost of the landowner. – We object to the total ban of all trees on the easement strip, and instead RWE should first specify the types of trees that might be compatible with the cable, and secondly to limit the size of diameter of all other trees. The definition of 'tree' is otherwise too wide and implies that an annual clearing of all saplings is necessary. – We are often required to grant rights and accesses to Network Rail, this has 753emporar (for example) the laying of 753emporary tracks so they can access the railway. RWE are trying to impose easement terms that mean the landowner will be unable to grant such accessed to Network Rail without first seeking the consent of RWE. This is unreasonable and RWE are imposing unfair terms that impact the surface of the land. – RWE are seeking permanent accesses but there easement terms do not reflect the ongoing use, control and maintenance of these a–cesses. - RWE have not shown the location of their proposed chambers. We therefore do not know whether these will be in disruptive loc–tions. - The land will be severed in two, but RWE are attempting to limit their exposure to compensation to just the land that is broken up. The remaining land will become impossible to farm and the easement terms should not attempt to limit the claim for compensation to just those areas directly affected.	059	**Context** The Land Interest owns pasture land which is affected by the proposed cable route (Plots 3/8, 3/9, 3/13 & 3/16), works no. 9. The Land Interest also owns pasture land which is affected by the proposed temporary storage of excavated materials (Plots 3/10 & 311), works no. 11. In addition, part of the track owned by the Land Interest (Plot 3/17), works no. 15, is affected by a proposed operational access. Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 3 of the **Onshore Works Plans – Revision B [PEPD-005]**. **Concerns regarding restrictions on tree growth within the permanent Easement** The Applicant will only plant trees that are subject to compliance with legal obligations of consents within the DCO boundary affecting the Land Interest. The restrictions in relation to the prohibition on planting of trees in the 20m Easement Strip have been included as a measure to mitigate the risks associated with cable protection. This is a standard restriction for infrastructure easements and asset protection. Any detailed plans the landowner has for works or planting that could potentially conflict with the restriction are subject to obtaining prior written consent (such consent not to be unreasonably withheld or delayed). Trees and hedgerows removed to facilitate construction of the onshore cable will be reinstated in their original location, as far as practicable. Details of reinstatement of various habitat types can be found in the **Outline Landscape and Ecology Management Plan (LEMP) [APP-232]**. Further information regarding impacts to trees has been provided in the **Table 6-3 'Ecology'** and as part of the **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]**. For additional planting, Biodiversity Net Gain Information in **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES **[APP-193]** describes the strategy for securing Biodiversity units. **Contamination** The relevant representation raises concerns regarding the Applicant "seeking to impose costs on the landowner for clearing up any contamination found on the route". This is incorrect. The Applicant requests known information relating to contamination is provided by the Land Interest, and the draft voluntary agreements contain appropriate provisions which govern liability in relation to contaminated land. The voluntary

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agreements have been issued to the Land Interest's agent and the Applicant will progress discussions with the Land Interest.

Operational Access Requirements

The relevant representation raises concerns regarding the Applicant seeking to impose terms restricting the Land Interest's ability to grant access to Network Rail without seeking consent from the Applicant. The Applicant seeks new rights (i.e. operational access rights) over the existing access for maintenance purposes but does not propose to acquire the land and the rights sought by the Applicant will be exercised in common with existing rights of access and will be entirely consistent with the existing use of the land as an access road. It is noted that separate discussions are ongoing with Network Rail.

Joint bay Inspection chambers

The relevant representation raises concerns about the locations of the joint bays. Locations of the joint bays will not be known until the final design of the onshore cable route has been completed and will depend on several factors including cable specifications and other construction requirements. The voluntary agreements contain payments for joint bays.

Accommodation Works

The Applicant will seek to engage further with the Land Interest regarding detailed construction access design and accommodation works in accordance with the **Outline Code of Construction Practice (CoCP) [PEPD-003].**

Where severed land cannot be farmed the Applicant would be willing to negotiate an appropriate compensation claim for disturbance in accordance with the provisions of the Compulsory Purchase Compensation Code.

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Table LI72 Applicant's Response to Batcheller Monkhouse (Batcheller Monkhouse) on behalf of Grant Talbot and Theresa Talbot (Grant Talbot and Theresa Talbot) [RR-137]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI72.1	I am writing on behalf of my client, Grant Talbot and Theresa Talbot, who own and occupy a property affected by the Rampion 2 scheme. I write in response to the section 56 Notice, received, to give notice of my clients' interest in the property known as [REDACTED]. To provide a background, Theresa runs a successful business, Talbot Sports Horses, breeding and training show jumping and event horses, whilst Grant operates a large forage business marketing high quality forage products to equestrian businesses. I outline the key concerns below: 1. Access We consider that it would be inappropriate to access the cable routes via the [REDACTED]. The northern part of the yard is given over to high value horses with stables and menages. General access by contractors' vehicles and plant would pose a health and safety risk to riders training young nervous horses on the menages and clearly there is a security risk to consider as well. The bottom half is used by Grant to store baled forage and operate farm machinery and vehicles from. Again, a health and safety risk is posed by sharing the access with third party contractors etc. 2. Business The cable route will inevitably take land out of production during the construction phase. Grant Talbot's business depends on using high quality forage to make top quality feeds for horses. He has built up a strong customer base and supplies them on contract. It is essential to fulfil these contracts that he has access to clean young leys to provide the quality and quantity needed. A shortfall will jeopardise the contracts and result in not only a loss of business during construction, but for the future as well. Put simply this is not a product that can be brought in to replace lost production, and the impact on the business will extend beyond the completion date of the construction works. 3. Land Drainage The farm is situated on heavy Weald Clay which lies wet for much of the winter. The soil structure is quickly damaged. There are historic drainage systems across the farm and at present we have seen no plans to ensure that these historic schemes are not destroyed by the excavations for the cable route. It is essential that a qualified drainage contractor/consultant is employed to ensure that this issue is tackled before construction works commence. 4. Conclusion The impact the scheme will have on the business operations at [REDACTED] is significant. The project will compromise the area of ground available, which will reduce yields, to the detriment of the forage business. While access via the farmyard is also not appropriate. Measures to mitigate the disruption caused to the business and advanced discussions to ensure that the project is fully aware of the business implications, will be crucial. Yours faithfully Batcheller Monkhouse	060	**Context** Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 30 and 31 of the **Onshore Works Plans – Revision B [PEPD-005]**. The Land Interest owns a farm located to the east of the A281, to the north of Shermanbury. The farm is used for haylage and equestrian purposes, and pasture land is affected by the proposed cable route (Works No.9 – Cable installation works (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. The area of the farm affected by Works No.9 includes Plots 31/1, 31/2, 30/14 and 30/15 shown coloured blue on the **Land Plans Onshore – Revision B [PEPD-003]**. There is an area of pasture land to the west of the cable installation area (Plot 31/2) classified as Works No.14 – Construction and operational access, for which construction and operational access rights are sought. In addition, part of a existing track owned by the Land Interest to the south of their Title boundary (Plot 30/15) is affected by a proposed construction and operational access (Works No.14). **1: Access Proposals** As per the aforementioned Works Plans, the main farm entrance and farmyard will not be used to access the cable route. The access was removed from the Order Limits. A construction and operational access (Works No. 14) (Plot 30/15) is however proposed to the south of the main entrance to the farm, leading directly from the A281. As outlined in Section 4.5 in **Chapter 4 of the ES: The Proposed Development [APP-045]**, the general construction corridor width is 40m wide along the cable route, which includes the haul road for construction traffic. Construction contractor access would be limited to the area of construction. Construction traffic interaction at crossing locations with existing farm tracks will be kept to a minimum and where unavoidable managed via signage. Across the cable construction corridor, speed limits will be imposed on haul roads and access tracks. The construction corridor will be fenced with stock proof fencing where farming practices require as stated in the **Outline Code of Construction Practice (CoCP) [PEPD-033].** Site Security will be ensured as outlined in Section 4.6 of the Outline CoCP. Please see comment below re compensation and business considerations. **4: Impacts and Mitigation on Agricultural Uses** As the project progresses to the point of entry being taken for construction, the Applicant is keen to have ongoing discussions with the Land Interest to understand how best to mitigate

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any temporary severance of land during the construction period, which can include temporary accommodation works (e.g. fences, gates and crossing points).

In this location, the cable construction corridor runs through the centre of the pasture land. The Applicant will continue to engage to further understand the Land Interest's specific requirements to accommodate the haylage business operations and equestrian uses, and minimise disturbance wherever possible.

The Applicant is willing to discuss appropriate and reasonable accommodation works and mitigation measures during construction of the project to minimise disturbance to the Land Interest. The Applicant has been in correspondence with the Land Interest and their agent since February 2021 continues to engage on these matters.

2: Compensation

If Compulsory Purchase Powers are used, affected Land Interests will be compensated in accordance with the provisions of the Compensation Code. Claims for disturbance and crop loss will be considered where reasonable, substantiated and shown to be caused as a direct consequence of the temporary use of the land and the works in accordance with the relevant legislation.

Once the cable has been constructed and the land reinstated, the land can be returned to normal use. Please see further information described in paragraph 4.5.51 of the **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**.

3: Land Drainage

The Applicant has considered to the impact to land drains and will apply C-28, detailed in the **Commitments Register** **[APP-254]**. It reads as follows: 'Particular care will be taken to ensure that the existing land drainage regime is not compromised as a result of construction. A specialist drainage contractor / consultant will be engaged prior to construction to develop the pre- and post-construction drainage plan on agricultural land. Land drainage systems will be maintained during construction and reinstated on completion. This measure will be implemented prior to construction and is secured by DCO requirement 22 (5) (c) for a Construction Phase Drainage Plan as part of the Code of Construction Practice.

Soils and agriculture matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-2 'Environment and disturbance'**.

The **Outline Soils Management Plan (SMP)** **[APP-226]** includes a section on drainage systems which explains the importance of piped drainage systems to agricultural land and commits Rampion 2 to developing a Construction Drainage Plan to support the stage specific CoCP. Measures to protect soil quality during handling are set out in the **Outline SMP** **[APP-226]**, these include field tests to assess whether soils are in a suitable condition to be handled. An Agricultural Land Classification (ALC) survey will be completed for all areas where soils may be subject to disturbance due to pre-construction works to confirm baseline conditions. The Applicant is committed in the **Outline SMP** **[APP-226]** to restoring land to its original ALC grade.

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Table LI73 Applicant's Response to Lester Aldridge LLP (Lester Aldridge LLP) on behalf of Green Properties (Kent & Sussex) Ltd [RR-138]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI73.1	Rights sought 1. Green Properties (Kent & Sussex) Ltd ("Owner") is the freehold owner of plots 33/4, 33/22, 33/23, 33/24, 33/25, and 33/26 ("Land"), listed in Category 1 of the Book of Reference. 2. The Applicant is unnecessarily seeking to acquire new rights, impose restrictive covenants, and temporarily use land within their ownership for the installation of electricity connection cables between the proposed converter station at Cowfold and the substation at Bolney. 3. The proposed acquisition of new rights and imposition of restrictive covenants will permanently affect the enjoyment and use of the Order Plots and the Applicant has not justified the need for this premature acquisition. Inadequacy of consultation process 4. The Applicant's Statement of Reasons ("SoR") confirms that consultations were conducted with affected persons and their feedback was considered in the cable route design decision-making process (see SoR ref. 6.2.3). However, the Applicant has woefully failed to appropriately consider alternative proposals put forward by the Owner. 5. The Applicant's route completely destroys the Owner's woodland planting scheme, which was previously accepted as part of the prestigious Queen's Green Canopy ("QGC") programme launched by the Woodland Trust specifically for the platinum jubilee of the late Queen Elizabeth II consisting of 70 acres. 6. The Owner kept a 50-meter strip free of saplings for the Applicant's cable installation and the Applicant has not considered this route. 7. The Owner repeatedly presented alternative routes that were ignored by the Applicant thereby demonstrating a continued pattern of disregard for consultation. For example: a The Applicant conducted a Targeted Onshore Cable Route Consultation from 18th October 2022 – 29th November 2022, including looking at different areas including at Area 7a (Cowfold). The map provided as part of Area 7a consultation shows two potential route corridors affecting the Owner running east from the proposed Oakendene Project Substation, yet the consultation document does not consult on these two options. b The Applicant presented a "third" option – by way of a single plan dated March 2023 - without any explanation or background information, and again chose not to consult or provide further details on this option. c The recent Cowfold Consultation (see Exhibition boards presented at the event on 21st June 2023) reveals conflicting information. Slide 2 shows the two cables corridors moving east from	061	**Context** The Land Interest owns pasture land which is affected by the proposed cable route (Plots 33/23, 33/24, & 33/26), works no. 19 for which a package of Cable Rights and a Restrictive Covenant are required. The Land Interest also owns pasture land which is affected by temporary construction access and permanent operational access (Plot 33/25), works no. 14, as well as temporary construction access (Plots 33/4 & 33/22), works no. 13. Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 33 of the **Onshore Works Plans – Revision B [PEPD-005]**. **Consultation and Engagement** The Applicant has undertaken extensive engagement with the Land Interest's representative Mr Dickson and his different land agents since 2020 mainly via telephone, email and letter including in relation to the assessment and consideration of alternative routes proposed by the Land Interest. This is summarised below and can further be seen in the correspondence of 18th May 2023 which sets out the Applicant's responses to the Land Interest Proposals in detail. The Applicant has met with the Land Interest's agent and the Land Interest representative – Mr Dickson (at College Wood Farm – see relevant representation response LI 94.1 for Thomas R Dickson in April 2023. Further on-site meetings at Kent Street were offered but have not been accepted by the Land Interest. The Applicant carried out a non-statutory consultation exercise from 14 January 2021 to 11 February 2021 via the "Rampion 2 Virtual Exhibition in 2021". The Virtual Exhibition document was uploaded to the Rampion 2 website and is attached at **Appendix 11 Rampion 2 Virtual Exhibition 15.01.21**. The document included Plans identifying cable route options. Plan 5 identified two cable route options in the area east of Oakendene substation site. The 'northern route' was proposed on the northern part of the Land Interest's land and a 'southern route' on the southern part of the Land Interest's land and neighbouring third party land to the south east of Oakendene. Further Proposed Development requirement changes were communicated to the Land Interest through the course of ongoing engagement for example the Land Interest's agent was informed of the requirement for a trenchless crossing under Kent Street on 13th May 2022 (see **Appendix 19 Email to G Streeter 23.05.22**). Further to requests by the Land Interest for hard copy consultation and DCO documents, relevant documents were sent to Mr Dickson's agent by courier on 22nd November 2022 after a failed attempt to deliver by the courier due to Mr Dickson being on holiday and further to DCO submission

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	Oakendene (as per the 2022 material). The sketch on slide 3 shows a single corridor option which matches the current DCO Land Plans. It is therefore evident that the Applicant had already made a pre-determined decision on which corridor to pursue. Failure to negotiate the CPO 8. The Applicant has not seriously considered alternative means of bringing about the objective of the CPO in respect of the Land. 9. The SoR states that: Discussions with landowners for the land rights required for the cable route and associated operational access routes have been taking place and are ongoing with the majority of landowners and (where appropriate) their agents / advisors. Key Terms have been issued in the majority of cases where there has been active landowner engagement so as to enable heads of terms to be provided. 10. This is untrue and there is an overwhelming case that the Applicant has failed properly comply with the Government Guidance on CPOs & The Crichel Down Rules. For example: a no heads of terms for a voluntary agreement have been issued to the Owner. B The Applicant requires agreement with 173 landowners and its own records confirm that it is in negotiation with just 25 landowners (14%) and terms agreed with 3 landowners (1.7%). 11. The ground under which a CPO is needed because negotiations to acquire land by agreement have been unsuccessful. The acquiring authority must show that: a it (or its agent) has sought to acquire the land by agreement by pursuing negotiations with the Owner; AND b these have failed that therefore the CPO is needed as a measure of last resort. 12. The Applicant has not shown this and displays a continued unwillingness to engage with affected parties, including the Owner. The Owner (via its agents) is open to meaningful negotiation with the Applicant and awaits engagement to agree an acceptable route. Extent of CPO not justified 13. A CPO must only be confirmed where there is no alternative means of bringing about the objective of the CPO. This is widely accepted as meaning other than by use of compulsory purchase powers. 14. The DCO Land Plans identify a corridor of 100 metres through the Land over which it seeks rights. It completely contradicts the Applicant which previously confirmed in writing they required a much narrower corridor. The inclusion of 33/25 within the DCO also completely severs the entirety of the Land from the public highway and is not proportionate.		documents were sent directly to Mr Dickson on 26th October 2023. Emails "Hard copy document email 1" and Hard copy email 2" confirming the hard copy information sent are attached at **Appendix 20 Email to G Streeter 22.11.22** and **Appendix 21 Email to Tom Etherton 11.01.24**. **<u>Alternatives Considered</u>** The second Statutory Consultation (Oct to Nov 2022) identified the same two options for the Work no 19 onshore connection works through the area shown on Page 22 of the 'Targeted Onshore Works Plans Version no.8' (42285-Wood-PE-ON-MD-0004) which were the plans subject to the consultation. Further to the end of the second Statutory Consultation period in December 2022 attempts by the Applicant were made to further engage. The Applicant communicated to Mr Dickson in March 2023 that an assessment of the two routes had been carried out and that the southern route was least preferred due to nature conservation designation combined with engineering requirements and residential amenity constraints in the vicinity of the trenchless crossing required for Kent Street Crossing. The Land Interest stated that he would like to discuss further cable route alignments in April 2023. The Applicant progressed discussions with the Land Interest to explore the potential for an appropriate amendment to the cable route in the context of the assessment of the two route options shown in the non-statutory consultation (January 2021) and second Statutory Consultation (Oct - Nov 2022). The Applicant sought to engage informally with the Land Interest prior to the final formal consultations in Spring / Summer 2023. This chain of discussion and actions regarding the proposed cable routeing through the northern part of the Land Interest's land at Kent Street was recorded in the letter from the Applicant to the Land Interest of 18 May 2023 (**Appendix 22 Letter to Mr Dickson 18.05.23**) – the extract from which is set out in italics below: *"Further modifications to the southern cable route (option) were also explored by the Rampion 2 team, to establish if a route with comparable or only marginally increased impacts to the 'northern cable route' could be identified which would be acceptable both to Rampion 2, having regard to objectively assessed impacts, and to you, and would therefore enable us to reach an agreement on the land rights required for Rampion 2.* *Through this exercise, a further modified route immediately to the north of the southern cable route was identified as shown cross hatched green and orange on the enclosed plan ref 42285-WOOD-CO-ON-PN-MD-0020, which was hand delivered to your address on 7th April 2023. We discussed this plan further and you stated that, as the cable routeing went through the centre of the field, it would have a sterilising impact on your farming and as such you considered it unacceptable. You requested that Rampion 2 consider:* *1) the movement of the cable route towards the southern boundary of the field and*

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	15. The only reasonable explanation for creating a corridor of such excessive width is that the Applicant is aggressively pursuing long-term strategic objectives that are completely irrelevant to the scheme objectives. 16. There has been not meaningful attempt by Applicant to justify the CPO by reference to alternatives which would achieve the same objectives in breach of their common law duty. Failure to Offer Dispute Resolution 17. The Applicant has not offered the Owner access to ADR throughout the CPO process, contrary to the Government's CPO Guidance. Lack of funding 18. The Applicant lacks funds and cannot guarantee funding from its shareholders for the project as it is a SPV, which does not have assets of its own. There is a risk the Applicant cannot fund the project and would be unable to offer compensation to affected parties. This is also relevant as there must be adequate resources available to implement both the CPO and the CPO scheme within a reasonable time frame.		*2) an extension of the proposed trenchless cable installation (by Horizontal Directional Drill (HDD)), eastwards into the next field. This would extend the drilled section further into the open cut trenched section (shown cross hatched green to the east on the enclosed plan).* *The above requested changes were considered by the Rampion 2 team. However, we concluded that such a change was not justified on balance. This was due to it having greater potential impacts (including the amenity of nearby residents, effects on trees and vegetation) and significant additional cost,* *We subsequently spoke on the telephone in light of the above and you indicated that the proposed cable route shown on plan 42285-WOOD-CO-ON-PN-MD-0020 would have a greater impact on your farming than the 'southern route'. You then asked for the cable to be located as far south as possible in the northern cable route corridor (as consulted on in summer 2021). I explained that there are tree and hedge buffers which need to be maintained which prevent the siting of the cable immediately adjacent to the field boundary, but that we would seek, in our final design, to site the cables as far south as possible within the DCO application boundary to reduce interference with any tree planting carried out by you so far as practicable.* *I confirm that, further to the above, the northern cable route as shown on the enclosed plan will be included in our DCO red line boundary for our consent application. We remain of the view that, with ongoing planning and mutual co-operation, our proposals and the tree planting regime you have started to implement can both be delivered…."* In summary, the Applicant considered the alternative cable routes and HDD compound locations put forward by the Land Interest and determined that for environmental, engineering and amenity reasons the Applicant's proposed route to the north would be progressed. **<u>Queens "Platinum Jubilee Woodland" Project</u>** The Relevant Representation makes reference at points 5 and 6 to the Queens Green Canopy and alleges that this was not considered by the Applicant. The Applicant disagrees. In November 2022 further to the 2nd Statutory consultation, the Applicant received a plan of land at Kent Street which the Applicant was informed by the Land Interest's Agent – (Mr Streeter) identified land to the east of Kent Street for the Queens Green Canopy scheme. However, the Applicant noted that some of the land was not in Green Properties ownership. The Applicant therefore asked for further clarity, information and correspondence with the Woodland Trust relating to the Queens Green Canopy project in its letter dated 18th May 2023 to check the extent to which the planting scheme would be compatible with the Applicant's cable routeing. Despite repeated requests, no further information giving any clarity on the Queen's Canopy proposals for the Land Interest's land was provided by the Land Interest or his Agent for

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			the Applicant's consideration, however it was assumed that the planting would progress when the routeing cable routeing decision was made. The Applicant understands trees have now been planted.in the proposed Rampion 2 northern cable route. Some of the planting is therefore unlikely to be compatible with the cable routeing and there may be some removal required. The Applicant is prepared to commit to try and reduce impacts where possible through detailed siting within the DCO red line boundary. **DCO Order Limit Requirement** Point 14 of the Relevant Representation states that the DCO limits requirement in this location is disproportionate and severs land from the highway. The land area within the DCO Order Limits through this land is c.100m. The land is adjacent to Kent Street where trenchless crossing methodology is expected to be utilised. A trenchless crossing compound is therefore likely to be required and flexibility for the trenchless crossing requires a 100m width to ensure that the crossing can be achieved taking into consideration potential ground conditions and the nature of the crossing obstacle itself and further environmental and physical constraints. The cable construction corridor beyond the trenchless crossing compound area will be refined to a c.40m construction corridor prior to the start of construction. This is in line with the Applicant's approach set out in The **Statement of Reasons** **[PEPD-012]**. Paragraphs 6.9.42-6.9.45 and 9.11.7 -9.11.9 outline the Applicant's approach to proportionality and the intention to use the powers in Article 32 (Temporary use of land for carrying out the authorised project) to take temporary possession of the wider cable construction corridor of 40m (wider at crossing points where trenchless installation techniques will be used) then permanent acquisition of the land rights and a restrictive covenant is required over a narrower permanent area of approximately 20m to retain, operate, maintain and decommission the infrastructure. With regard to the trenchless crossing locations, Section 9.11.9 of the **Statement of Reasons** **[PEPD-012]** states that where trenchless installation is used, the depth at which the cable ducts need to be installed under the obstruction to be 'crossed' will define the spacing needed between the ducts (within which the cables will be installed) and also the distance between the drill entry and exit pits. The depth will be guided by the nature of the obstacle to be 'crossed' beneath and the requirements of the organisation responsible for the obstacle, whilst spacing will depend on the nature/condition of the ground at that depth and its ability to absorb and transfer heat away from the cables. Access across the cable construction corridor for farm management will be discussed with the Land Interest and agreed crossing points implemented for the construction period. **Voluntary Agreement Heads of Terms**

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			The Applicant notes at point 10 that the Land Interest states that no heads of terms for a voluntary agreement have been issued to the owner. The Land Interest has previously expressed a preference not to receive Heads of Terms for a voluntary land agreement. This was communicated verbally by the Land Interest to the Applicant by phone on 22nd May 2023 and recorded on the landowner engagement tracker. The Applicant notes at point 12 that the Land Interest is 'open to meaningful negotiation with the Applicant. In light of the comments in the relevant representation, the Applicant has therefore issued heads of terms for a voluntary agreement were issued on 26th January 2024 and awaits engagement to progress matters'. Point 17 of the Relevant Representation states that the Applicant has not offered the Land Interest ADR. As noted above negotiations with the Land Interest on voluntary agreements had not been progressed in 2023 due to the Land Interest communicating a request not to issue Heads of Terms. The Applicant welcomes the comments that the Land Interest now wants to engage and its land agent has now issued Heads of Terms. The Applicant's land agent also made the following offer in the letter of 26th January 24 enclosing the Heads of Terms "*Once you have been able to review the Heads of Terms I would be happy to discuss what forms of Alternative Dispute Resolution (ADR) may be appropriate in order to seek to resolve any outstanding concerns that may relate to agreeing the amount of compensation payable, the proposed works and acquisition, as well as mitigation measures and accommodation works which may be adopted of undertaken.*" The Applicant has demonstrated in its **Funding Statement** **[APP-025]** how the delivery of the Proposed Development will be funded and how compensation liability for the compulsory acquisition of land and rights will be met. The Funding Statement explains that Rampion 2 Extension Development Limited is a joint venture between RWE Renewables UK Limited, Enbridge Rampion UK II Limited, and a Macquarie-led consortium. The company vehicle for progressing the Rampion 2 project is a special purpose vehicle (SPV). The use of SPV's for infrastructure project delivery is common. The SPV parent companies are companies with proven funding and technical delivery of large-scale renewable energy project including offshore wind farms. This is set out in the **Funding Statement** **[APP025]** which states that Applicant's ultimate parent companies and investors have significant assets and financial resources available to them" a summary of which is set out in the **Funding Statement** **[APP-025]**. Accordingly, were the Secretary of State to grant the compulsory acquisition powers sought in the order, the Proposed Development is likely to be undertaken and not prevented due to difficulties in sourcing and securing the necessary funding.

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Table LI74 Applicant's Response to Savills UK Ltd (Savills UK Ltd) on behalf of His Grace Edward William Fitzalan-Howard, 18th Duke of Norfolk (His Grace Edward William Fitzalan-Howard, 18th Duke of Norfolk) [RR-145]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI74.1	Dear Sirs RE: The Duke of Norfolk, Angmering Park Farms LLP, Trustees of The Bernard 16th Duke of Norfolk's 1958 Settlement Reserve Fund, Trustees of The Angmering Park Estate Trust, The Personal Executors of Lady Sarah Margaret Clutton Rampion 2 Offshore Windfarm – Development Consent Order I write in regard to the application for a development consent order and compulsory purchase order relating to the Rampion 2 Offshore Wind Farm which was submitted by Rampion Extension Development Limited on 10 August 2023. Savills are instructed by the Duke of Norfolk, beneficial owner of the Arundel Estate and the Trustees of various Trusts as set out above. Unfortunately, and despite our best efforts, we seem to be at an impasse with Carter Jonas (CJ) who are the agents acting on behalf of the Rampion 2 project. Indeed, we would suggest that no real progress nor meaningful negotiation has now been made for several months. The main issues with how this project is being dealt with (amongst many others) are that: My clients are not being offered reasonable compensation terms and when we have tried to negotiate fair terms (as would normally happen in such matters) we have been met with blanket resistance, it seems to us that CJ have no intention of altering or improving their initial offer. For example, we have tried to negotiate land values with CJ and they have thus far refused to move on this and have disregarded any valid comparisons to recent, similar large infrastructure projects such as Rampion 1, and the Esso pipeline project. My client's concerns are not being listened to and taken on board and the lines of communication of The Rampion project team and their consultants are confusing and misleading. For example, alternative routes have been proposed, but have not been properly evaluated by RWE and their agents and where they have been adopted there are still significant information gaps around the development giving rise to concern about various estate enterprises and businesses. Emails and requests for information have remained unanswered, such as the locations of permanent manhole access points and associated access rights required through extended private routes through the estate which will cover some significant distance from the nearest public highway. Some areas of the route corridor through the estate are extensive, far wider than the standard construction corridor, which could threaten the nationally significant conservation project know as the 'The Peppering Project', further detailed discussion may mitigate these concerns but thus far this has not occurred. Insufficient information has been provided to us / our clients for them to be able to make an informed decision as to whether or not to sign the Key Terms that have been issued by CJ and when we have asked for more information or greater explanation, none has been forthcoming. For example, myself and the other agents acting for landowners along the route requested copies of the draft legal agreements so we could fully advise our clients.	N/A	**Context** This relevant response is the same as LI66 on behalf of Angemering Park Farms Ltd. The response to the matters raised has been provided under LI66 which sets out engagement with the Duke of Norfolk in relation to all his various Land Interests. **Consideration of Alternatives and consideration of the 'Peppering Project'** **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** details how the design of the Proposed Development has evolved and demonstrates that all aspects of site selection, site access and future access requirements have been incorporated into the design of the Proposed Development to minimise and mitigate adverse impacts. The chapter explains the reasonable alternatives considered for the onshore cable corridor and the reasons for selection of the preferred option. Paragraphs 3.4.41 to 3.4.47 of the **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** detail the alternative Longer Alternative Cable Routes (LACRs) presented at PEIR SIR RED (2022), which include the narrative confirming the consideration of the referenced agri-environment scheme ('The Peppering Project'). Paragraphs 3.4.60 to 3.4.70 of the **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** detail the preferred options chosen following Statutory Consultation exercises. Paragraph 3.4.66 of the **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** details the primary considerations for LACRs which was subject to further analysis following the outcome of the third Statutory Consultation exercise. This presence of a release project for curlew (listed as Near Threatened in the IUCN Red List of Threatened Species) centred on Harrow Hill, and the funded enlargement of the agri-environmental scheme which supports Species of Principle Importance were all considered. Multiple consultation responses were received from statutory bodies and non-statutory bodies citing that these areas should be avoided. The chosen option largely avoids the agri-environmental scheme (including all of the area that has been established for some time) to avoid effects on notable birds, such as grey partridge. **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]** includes a range of embedded measures to ensure that potential effects on ecological features including ancient woodland, hedgerows and breeding birds are avoided, minimised or mitigated for, with reinstatement and commitment to Biodiversity Net Gain allowing for the delivery of enhancements in the South Downs National Park prior to and during the construction period.

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	These have only recently been provided to some clients and demonstrate that the Key Terms document produced by CJ was insufficient, lacked detail and could not be signed and would have resulted in protracted or abortive negotiations with solicitors. The Rampion 2 project team are not willing to cover the cost of landowners' proper and reasonable professional fees, this has been apparent at the consultation stage and remains a concern as we enter negotiation of the Key Terms. There seems to be a disjointed approach to how landowners and agents are being informed of matters and a consistent lack of detail. Whilst my clients and I will continue to engage with RWE and CJ in order to try and achieve the best outcomes for the affected land, we felt we must make a representation to you so that you aware of the poor engagement and lack of detailed meaningful consultation that has thus far taken place between the Rampion 2 project and our client. Yours faithfully Guy Streeter MRICS FAAV Director RICS Registered Valuer		The Applicant notes the issues raised in this relevant representation. Cable route alternatives and sifting matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-4 'Route / Alternatives'**.

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Table LI75 Applicant's Response to HJ Burt and Son (HJ Burt and Son) [RR-147]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI75.1	I act for a number of landowners and occupiers along the proposed cable route with land affected by the scheme or access to it.	N/A	The Applicant reserves the right to respond to any points made in due course.

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Table LI76 Applicant's Response to Joanne Higgins [RR-170]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI76.1	Draft Development Control Order (DCO) EN010117" and the supplementary Notice of Acceptance of a DCO Plot Number 32/13. I object to the above DCO. I live at [REDACTED] with my 18 month old daughter and my husband. I have the right to use Kings Lane, which is a private lane, to give me access to my house, which has stood since the mid 1600s. King's Lane is the only vehicular access to my house, and the only access which allows my husband and I to be able to get out and work, to get my daughter to nursery and for any medical appointments we need to attend. I am making this objection specifically about the CPO, and independently of my views on the broader Rampion project. My objection is that the CPO over this strip of land is unnecessary. The overarching Rampion project will already dig up two specific parts of the lane to dig trenches and there is no CPO planned for those pieces of land and so if the Rampion project believes it can progress to dig huge trenches on the land without a CPO then it seems entirely without reason why they need one specific CPO for land at the very month of our lane and it is not clear, not has it been disclosed, what the purpose of that ownership would be for. Despite the fact that Rampion has in recent months been in contact with me as the homeowner several times by recorded delivery to explain the nature of the overarching Rampion project, they have made no reference to the need or requirements to purchase this piece of land. It was only discovered when a neighbour spotted a letter fixed to a gate post at the end of King's Lane, which was there for a relatively short time and has now been removed. If it was critical to the success of the project then I would have expected it to be included in the various pieces of documentation and plans that Rampion have sent by recorded delivery over the last few months, as it has not been then I deduce that the purchase is unnecessary to the success of the project. The DCO is also incorrect in the categorisation of King's Lane as a 'bridleway and public footpath', as stated above, and as the applicant is well aware as they have been to the area and been in contact with some of the residents it is a private road designed as the ONLY vehicular access to a number of homes on the road, so to categorise as a bridleway and public footpath is at best misleading, and at worst dishonest, and downplays the impact this strip has on my day to day life. The applicant has given no indication as to why they wish to purchase the land, and the whole process has brought an unnecessary amount of stress and confusion as to how I am going to be able to continue to access my house with my young daughter. It is not obvious how I will continue to be able to access my own home during the works, let along with the addition of the applicant having ownership of a specific strip of land at the end of the lane. In summary, my objections are: (1) Securing ownership to this piece of land is unnecessary for the success of the project as rights of access to be able to deliver the project can be delivered in other more appropriate ways, and i respectively suggest that the applicant looks into before progressing the CPO; (2) the process of	062	**Context** Details of the operational access as it passes through this location are shown on Sheet 32 of the **Onshore Works Plans – Revision B [PEPD-005]**. The Land Interest has private rights of access over Kings Lane/ Moatfield Lane, (Plots 32/2, 32/3, 32/4, 32/5, 32/6, 32/11, 32/12/, 32/13 and 32/15) shown coloured blue on the **Land Plans Onshore - Revision B [PEPD-003]**, which provides access to their residential property. **1: Operational Access** Kings Lane/ Moatfield Lane is within the Order Limits for an operational access (Works No. 15). The Applicant seeks new rights (i.e. operational access rights) over Kings Lane/ Moatfield Lane, for this purpose, but does not propose to acquire the land. The rights sought by the Applicant will be exercised in common with existing private rights of access and will be entirely consistent with the existing use of the land as an access road. No ransom strip is created as the Applicant will not own the road and is not intending to purchase Plot 32/13. Operational Access Rights are defined in Schedule 7 of the **Draft Development Consent Order [PEPD-009]** and in summary comprise rights of access with or without vehicles and equipment: *for the purposes of operation, maintenance and decommissioning of the authorised development*". The rights are expanded on further in Schedule 7. Operational access (for light personnel or 4x4 vehicles) will be required throughout the project's lifetime, for inspections and maintenance of the cable route. It is anticipated that the Applicant would need to access the lane by either walking or driving, to carry out occasional maintenance responsibilities. **Cable Installation Works** In addition, Kings Lane/ Moatfield Lane is crossed twice (Plot 32/11 and Plot 32/3) by the proposed cable route (Works No. 9 – Cable installation works (including construction haul road and operational access)), which will involve open-cut trenching installation methodology, and therefore the Cable package of rights and restrictive covenants are sought, as identified in Schedule 7 of the **draft Development Consent Order [PEPD-009]**. Please see comments regarding maintenance of access below. **Plot 32/13 (Unregistered Land)** The small strip of land (Plot Number 32/13) at the end of Kings Lane, over which the Land Interest has private rights of access, is unregistered. Kings Lane itself (to the west of Plot 32/13) is a privately owned road. To the east of Plot 32/13 lies Plot 32/14, which is also unregistered, but falls within the adopted highway extent as verified by data provided by West Sussex County Council. The adopted highway then extends onto Kent Street to the east. The

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	consultation has been deeply flawed and has not engaged the residents of the lane to ensure each set of rights is being respected; (3) there is no overriding public interest in allowing this purchase to progress and risks challenge under Article 8 HRA 1998; (4) It is causing an immense amount of stress and worry to my young family as to how we will actually be able to access our own home, which is entirely avoidable had the applicant followed a consultation process, looked at more appropriate solutions, and engaged with the impact population, before going straight for a blunt measure of a CPO with no warning and no discussion. I request that my representative or I be granted the right to speak at any hearing during the Pre-examination stage of the process.		freehold ownership of Plots 32/13 and 32/14 is unknown (they are both unregistered on the Land Registry). As Plot 32/13 is unregistered and unadopted, the Applicant followed a process in accordance with its land referencing methodology (as per the Land Referencing Methodology within the **Statement of Reasons** **[PEPD-012]** to seek to ascertain who owns the land. The Applicant placed a notice on site on 6 April 2023 and maintained this weekly for six weeks requesting for someone to come forward if they believed they owned the land. No responses were received. The Applicant subsequently placed a notice pursuant to Section 56 of the Planning Act 2008 on site between September and November 2023, which the Land Interest refers to having seen. This notice is in accordance with Regulation 8 of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) and Regulation 16 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended), the purpose of which is to provide notice of the acceptance of the application of the Development Consent Order for examination by the Planning Inspectorate. **2: Consultation** The Applicant first consulted with the Land Interest in April 2023. Kings Lane/ Moatfield Lane was included within the draft Order Limits that was consulted upon in the Highways Consultation in April 2023. Consultation packs were provided at that time to Kings Lane/ Moatfield Lane residents as it was assumed that those dwellings have rights of access across Kings Lane in order to access their land and property. Chapter 6 of the **Consultation Report** **[APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. **3: Human Rights Act** The rights sought are necessary for the proposed development, are for a legitimate purpose and are no more than is reasonably required for the construction, operation, maintenance and protection of the project. Impacts on private rights will be kept to a minimum during the construction period and will be unaffected during the operational phase of the project. As explained in Section 13 of the **Statement of Reasons** **[PEPD-012]** any infringement with human rights is proportionate and legitimate and in accordance with the law, and is outweighed by the significant public benefits that will be delivered. **4: Maintenance of Access** The Private Means of Access (PMA) along Kings Lane/ Moatfield Lane will be temporarily suspended during the open-cut trenching of the lanes in Plot 32/11 and 32/3. The powers within the Order will allow such rights to be suspended whilst RED is in temporary possession of the land for construction purposes.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			Mindful of residents' concerns, the Applicant updated the **Outline Code of Construction Practice [PEPD-033]** at the Pre-Examination Procedural Deadline. Additional detail has been provided at Section 5.7.10 to explain how construction and access will be managed where crossing Private Means of Access (PMA). In summary: • All crossings of PMA will be developed to allow emergency access at all times (through the provision of road plating); • Contractors will be required to accommodate reasonable requests for access during the working day by temporary plating of trench unless a suitable diversion if provided around the works; • The trench will be plated or temporarily backfilled outside of construction working hours where feasible to restore access, unless a suitable diversion is provided around the works; • Rampion 2 Outline Code of Construction Practice Page 70 • Any access restrictions or closures will be communicated to all residents and businesses with affected rights of access (as recorded in the **Book of Reference [APP-026]** or successor document); and • A nominated point of contact on behalf of the Applicant will be communicated to all residents and businesses at least three months before the start of construction who can be contacted in case of any concerns of grievances. Matters relating to construction practices and project commitments are raised within this Relevant Representation have been responded to by the Applicant in **Table 6-2 'Environment and disturbance'**. As presented in the **Outline Construction Method Statement [APP-255]**, Section 2.9, crossing of existing services will be undertaken following surveys, using standard industry practices and in coordination with the utility owner / operator. The final comprehensive management strategies and design solutions will be developed in collaboration with stakeholders during detailed design. The Applicant has assessed the situation at the Kings Lane and Moatfield Lane crossing points and considered possible crossing methodologies. Crossing these narrow lanes via open cut trenching is assessed to be an appropriate crossing methodology which limits the construction activities at this location to a minimal duration. Access to residents will be managed via PMA protocols.

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Table LI77 Applicant's Response to Martin Keogh [RR-229]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI77.1	I have a caravan next to the site main concerns are dust , noise and vehicle access to the site what ans are in place to minimise these, how close will you becoming to the boundary fence next the carvan Park??	N/A	The Interested Party's relevant representation does not identify where their holiday caravan is. In the circumstances, the Applicant reserves its ability to comment further if necessary in due course. In the event that the holiday home is situated at Brookside Carvan Park, the Applicant notes the issues raised in this relevant representation. All environmental matters provided within this Relevant Representations have been responded to by the Applicant in **Table 6-9 'Brookside Caravan Park'**.

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Table LI78 Applicant's Response to Henry Adams LLP (Henry Adams LLP) on behalf of Mr and Mrs G Woolgar (Mr and Mrs G Woolgar) [RR-254]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI78.1	Mr and Mrs Woolgar are landowners on the route of the cable. They object strongly to the proposed easement terms as they have disproportional consequences for the land within, and outside, of the easement strip. For example, RWE are seeking rights to plant trees anywhere on the land, but this a small holding, with less than 8 acres of usable land, and tree planting might not be able to be accomodated. RWE are trying to impose so many terms, that it would be very easy to fall foul of these. For example, RWE wish to give prior consent before the landowner lays any drains or services in the ground. Such terms have significant consquences when trying to sell properties and there is some nervousness that such restrictive easements might render properties difficult to sell. The landowners wish to enjoy and use their land in the same manner without ever needing to consult with RWE or fear being in breach of the easement terms. For example, they wish to have the ability to install pipes and drains and position field shelters without falling foul of RWE's easement terms.	063	**Context** Details of the onshore cable route as it passes through the Land Interests land holding are shown on Sheets 29 and 30 of the **Onshore Works Plans - Revision B [PEPD-005]**. The Land Interest owns a residential property with outbuildings and two fields, situated to the west of Brighton Road, north of Shermanbury. The field to the west is laid to pasture and currently used for grazing/ equestrian purposes (as identified by Plots 29/23 and 30/1 coloured blue on the **Land Plans Onshore - Revision B [PEPD-003]**. The western field is affected by the proposed cable works (Works No.9 – Cable Installation works (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. Rights are defined in Schedule 7 of the draft **Development Consent Order (DCO) [PEPD-009]**. The Land Interest lives to the east of the land holding, with the eastern outbuildings and field used for equestrian purposes. The Applicant understands the Land Interest wishes to develop a residential property within the eastern side of the land holding. The western field is accessed via the eastern field and would involve crossing over the proposed Works No.9. As the project progresses to the point of entry being taken for construction, the Applicant is keen to have ongoing discussions with the Land Interest to understand how best to mitigate any temporary severance of land during the construction period, which can include temporary accommodation works (e.g. fences, gates and crossing points). **Reinstatement Tree Planting** The Applicant is not intending to plant trees over the proposed cable route. The rights sought under the DCO refer to reinstatement / replacement tree planting. Trees and hedgerows removed to facilitate construction of the onshore cable will be reinstated in their original location, as far as practicable. Details of reinstatement of various habitat types can be found in the **Outline Landscape and Ecology Management Plan (LEMP) [APP-232]**. For additional planting, **Biodiversity Net Gain Information [APP-193]** describes the strategy for securing Biodiversity units. **Future Easement** Land owned by the Land Interest is required for construction and operation of the permanent cable easement (Works No.9), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. Rights are defined in Schedule 7 of the **draft Development Consent Order (DCO) [PEPD-009]**. The land is required to be included in the Applicant's DCO at this stage to ensure that all required rights for construction

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			and operation are secured. If a voluntary land agreement is secured within the Land Interest compulsory acquisition may not be required. The Applicant seeks to negotiate rights for an easement to lay a cable within the proposed Order Limits. The easement will be finalised taking no greater area than required. As mentioned above, the cable restrictive covenant is required to protect the cable infrastructure. This prevents intrusive activities which could damage the underground infrastructure (e.g. building, excavation, intrusive trees). However, the restriction is not absolute as explained in further detail in paragraphs 6.8.14, 6.9.40-6.9.46 of the **Statement of Reasons [PEPD-012]**, where standard agricultural practices are permitted to a depth of 0.9m. Normal agricultural operations are therefore likely to be permitted and any requests by the Land interest for permission to install drains or pipes, build ditches or field shelters over the Easement Strip, will not be unreasonably withheld or delayed. The Applicant will necessarily require further detailed information to be able to understand the potential risks to the cables before making an informed decision on particular requests. If Compulsory Purchase Powers are utilised, affected Land Interests will be compensated in accordance with the provisions of the Compensation Code. Claims for disturbance and crop loss will be considered where reasonable, substantiated and shown to be caused as a direct consequence of the temporary use of the land and the works in accordance with the relevant legislation. Once the cable has been constructed and the land reinstated, the land can be returned to normal use. Please see further information described in paragraph 4.5.51 of the **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**. The Applicant confirms that it will engage further with the Land Interest regarding the refinement of the final land area and appropriate and reasonable mitigation measures during construction of the project to minimise disturbance to the Land Interest.

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Table LI79 Applicant's Response to Batcheller Monkhouse (Batcheller Monkhouse) on behalf of Mr Charles How (Mr Charles How) [RR-255]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI79.1	06 November 2023 Our Ref: DNB523/HC The Planning Inspectorate National Infrastructure Directorate Temple Quay House Temple Quay Bristol BS1 6PN Dear Sirs, [REDACTED] Rampion 2 response to section 56 Notice I write on behalf of my client, Mr Charles How, in response to the section 56 Notice, received in relation to the Rampion 2 Project. I take this opportunity to give notice of his interest in land affected by the project. I highlight the key concerns associated with the project, specifically in connection with the subject holding. 1) Farm business The current proposals for the Rampion 2 cable route run west to east just south of the A283. As a result of the route, there will be the loss in the use of fields, during the construction stage of works. This will result in the loss of grazing and will have a consequential impact on the profitability of the farm. The ground is regularly used for cattle, and it is therefore imperative that measures, such as suitable fencing and access to water, are implemented, to mitigate the impact the scheme will have on the day to day running of the farm business. 2) Access Of considerable concern to Mr How is the potential impact on the business due to the disruption that will be caused by any traffic restrictions on the A283. The farm depends on the A283 for access between Great Barn, which is the main holding (and is accessed from Chanctonbury Ring Road) and Lower Chancton Farm. The proposed route will cut across the farm access drive between the Lower Chancton Farm buildings and the A283. It is essential that this access drive is kept open at all times. As mentioned, the farm has cattle on site, so access to allow livestock movements, the transportation of feed and bedding, and veterinary emergencies, cannot be compromised. My client would welcome early discussions to ensure that Rampion 2 has a full understanding of the farm business, to assist in minimising disruption, as far as possible. Yours faithfully Batcheller Monkhouse	064	Details of the onshore cable route as it passes through the Land Interest's tenanted holding are shown on Sheet 23 of the **Onshore Works Plans – Revision B** **[PEPD-005]**. The Land Interest is a tenant farmer who farms pasture land (currently used for grazing) affected by the proposed cable construction route (Works No.9 – Cable installation works (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. Rights are defined in Schedule 7 of the **draft Development Consent Order (DCO)** **[PEPD-009]**. The main area of the tenanted land affected by Works No.9 is located to the south of 'The Pike' and includes part of Plot 23/2 and 23/7, shown coloured blue on the **Land Plans Onshore – Revision B** **[PEPD-003]**. **1: Compensation and Mitigation Measures** If Compulsory Purchase Powers are utilised, affected Land Interests will be compensated in accordance with the provisions of the Compensation Code. Claims for disturbance and crop loss will be considered where reasonable, substantiated and shown to be caused as a direct consequence of the temporary use of the land and the works in accordance with the relevant legislation. Once the cable has been constructed and the land reinstated, the land can be returned to normal use. Please see further information described in paragraph 4.5.51 of the **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**. **Accommodation Works** The Applicant will seek to engage further with the Land Interest regarding detailed construction access design and accommodation works in accordance with **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**. **Fencing** - The Applicant confirms that the construction area within the Order Limits will be fenced off for the duration of construction. **Crossing/ Access Points** - Accommodation works (to include access points where reasonably and practicable over the construction area) to seek to mitigate the impact will be discussed with the Land Interest in due course. The Applicant will discuss in more detail Accommodation Works with the Land Interest to ensure access is facilitated to any severed land. Where severed land cannot be farmed the Applicant would be willing to negotiate an appropriate compensation claim for disturbance.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			2: Maintaining Access to the Farm Mindful of residents' concerns, the Applicant updated the **Outline CoCP [PEPD-033]** at the pre-examination deadline. Additional detail has been provided at Section 5.7.10 to explain how construction and access will be managed. In summary: • Access restrictions will be kept to a minimum, with a diversion provided if possible; • Contractors will work with local stakeholders and accommodate reasonable requests for access; • The trench will be covered outside of working hours, and access will be restored in emergencies; and • Closures will be communicated to local residents in advance. The Applicant is willing to discuss appropriate and reasonable mitigation measures across the property during construction.

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Table LI80 Applicant's Response to Batcheller Monkhouse (Batcheller Monkhouse) on behalf of Mr D H Dumbrell, Mrs L Dumbrell & Mr R Dumbrell (Mr D H Dumbrell, Mrs L Dumbrell & Mr R Dumbrell) [RR-256]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI80.1	The main concerns regarding the impact Rampion 2 will have on the property: 1) Access must be provided over the construction area to be able to continue farming the severed land to the east during the works. 2) The construction area will need to be appropriately fenced off for livestock. 3) A remedial drainage scheme will be required if the construction works have an impact on the natural drainage of the land. 4) The extent of the area of land required for the Option Agreement by Rampion is too large and should be reduced to match the DCO application boundary.	065	**1: Maintenance of Access** Mindful of residents' concerns, the Applicant updated the **Outline Code of Construction Practice (CoCP) [PEPD-033]** at the pre-examination deadline. Additional detail has been provided at Section 5.7.10 to explain how construction and access will be managed. In summary: • Access restrictions will be kept to a minimum, with a diversion provided if possible; • Contractors will work with local stakeholders and accommodate reasonable requests for access; • The trench will be covered outside of working hours, and access will be restored in emergencies; and • Closures will be communicated to local residents in advance. **2: Fencing of Construction Area** The Applicant confirms that the construction area within the Order Limits will be fenced off for the duration of construction. Accommodation works (to include access points over the construction area where reasonable and practically possible) to mitigate the impact will be discussed with the Land Interest in due course. **3: Remedial Drainage** The Applicant has considered to the impact to land drains and will apply C-28, detailed in the **Commitments Register [APP-254]**. It reads as follows: 'Particular care will be taken to ensure that the existing land drainage regime is not compromised as a result of construction. A specialist drainage contractor / consultant will be engaged prior to construction to develop the pre- and post-construction drainage plan on agricultural land. Land drainage systems will be maintained during construction and reinstated on completion. Temporary cut-off drains will be installed parallel to the trench-line, before the start of construction, to intercept soil and groundwater before it reaches the trench. These field drains will discharge to local drainage ditches through silt traps, as appropriate, to minimise sediment release.' Soils and agriculture matters raised within this Relevant Representation have been covered in **Table 6-2 'Environment and disturbance'.**

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			The **Outline Soils Management Plan (SMP)** **[APP-226]** includes a section on drainage systems which explains the importance of piped drainage systems to agricultural land and commits Rampion 2 to developing a Construction Drainage Plan to support the stage specific Code of Construction Practice. Measures to protect soil quality during handling are set out in the **Outline SMP** **[APP-226],** these include field tests to assess whether soils are in a suitable condition to be handled. Agricultural Land Classification (ALC) survey will be completed for all areas where soils may be subject to disturbance due to pre-construction works to confirm baseline conditions. The Applicant is committed in the **Outline SMP** **[APP-226]** to restoring land to its original ALC grade. The **Outline SMP** **[APP-226]** commits to investigation of agricultural land quality issues if these are raised with the Agricultural Liaison Officer appointed for the construction phase of the Proposed Development either during construction or during the aftercare period. **4: Order Limits** Details of the onshore cable route as it passes through the Land Interest's holding are shown on Sheet 26 of the **Onshore Works Plans – Revision B** **[PEPD-005]**. The Land Interest owns pasture land (currently used for grazing and haylage) affected by the proposed cable construction route (Works No.9 – Cable installation works (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. Rights are defined in Schedule 7 of the draft **Development Consent Order (DCO)** **[PEPD-009]**. The land affected by Works No.9 is situated to the east of the B2135 and includes Plots 26/13 and 26/14, shown coloured blue on the **Land Plans Onshore - Revision B** **[PEPD-003]**. The fields affected by the proposals cover the western section of a larger land holding. The Applicant seeks to negotiate rights for an easement to lay a cable within the proposed DCO Order Limits. The easement will be finalised taking no greater area than required. As detailed above, Land owned by the Land Interest is required for construction and operation of the permanent cable easement (Works No.9). A package of Cable Rights and a Cable Restrictive Covenant (as defined in Schedule 7 to the Order) is therefore sought over this land. The land is required to be included in the Applicant's DCO at this stage to ensure that all required rights for construction and operation are secured. If a voluntary land agreement is secured within the Land Interest compulsory acquisition may not be required. The Applicant does not agree with the Land Interest's comment that the powers sought are disproportionate to the actual area of land required for construction. As explained by the Applicant in the **Statement of Reasons** (Paragraphs 9.11.7-9.11.9) **[PEPD-012]**,

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			not all of the land owned by the Land Interest within the Order Limits will need to be permanently acquired. Flexibility is sought to enable the construction of works anywhere within the area identified for those works on the **Onshore Works Plans – Revision B [PEPD-005]**, within which area there will be a circa 40m construction corridor and 20m permanent easement corridor, save for in certain circumstances such as where HDD techniques are employed. The final routing is not fixed and will be dependent upon matters such as pre-construction surveys. As explained in the paragraphs in the Statement of Reasons, the Applicant will seek the minimise the extent of permanent rights required by taking temporary possession first of the wider construction corridor and then permanently acquiring the rights required over the narrower area when the location is known. The Applicant welcomes the Land Interest's willingness to discuss matters further and confirms that it will engage further with the Land Interest regarding the refinement of the final land area and appropriate and reasonable mitigation measures during construction of the project to minimise disturbance to the Land Interest.

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Table LI81 Applicant's Response to Batcheller Monkhouse (Batcheller Monkhouse) on behalf of Mr Mark Cleaver and Mrs Karen Cleaver (Mr Mark Cleaver and Mrs Karen Cleaver) [RR-257]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI81.1	06 November 2023 Our Ref: DNB743/HC The Planning Inspectorate National Infrastructure Directorate Temple Quay House Temple Quay Bristol BS1 6PN Dear Sirs, Washington Caravan and Camping Park, London Road, Washington, RH20 4AJ Rampion 2 response to section 56 Notice I write on behalf of my client, Mr Mark Cleaver and Mrs Karen Cleaver, in response to the section 56 Notice, received in relation to the Rampion 2 project. I am writing to give notice of my clients' interest, in land affected by the scheme. Mr and Mrs Cleaver own and operate Washington Caravan and Camping Park, and also occupy the newly built dwelling, also located onsite. The key concerns relating to the project are outlined below: 1) Indicative Planning Application Boundary The indicative planning application boundary line, denoted on the plans, extends beyond the area that is understood to be entirely necessary for the construction works and cable. It is request that these boundary lines are refined to capture only the area that is required. The indicative planning application boundary (green line) currently threatens the future development opportunity of the dwelling. It is essential for the business owners to have onsite accommodation. Construction of the dwelling has only recently been completed and plans are in place to build a garage. The green line conflicts with these plans, and I therefore ask that this is reviewed and refined to only the area that is necessary, taking into consideration the future impact this will have on the future occupation of the land, for business purposes. 2) Camping Business The noise, pollution and heavy vehicle movements, that will be generated as a result of the project, do not complement in anyway, the quiet enjoyment sought from customers on a camping break in the countryside. The campsite currently utilises the ground from the very south of The Paddocks (next to the pond), to the northernmost point of the grounds. The disruption caused, throughout the day by the project, will have a devastating effect on the business. It is estimated that at least 50 percent of the campsite will need to be closed off and the damage to my clients' business, home and livelihood are of real concern. 3) Compound area In conjunction with the above point, the location of the proposed compound area, on land directly bordering the campsite, is a significant concern. The nature of a compound area will mean that the disruption caused here will be long term; potentially, it is understood, up to 3 years. The impact this will have on the site and custom is considerable and will increase and prolong the extent of disruption caused to the site, further. 4) Access The A283 is notoriously a busy and dangerous road. It is therefore urged that serious consideration is given to access, specifically the location of the compound access. On safety grounds alone, the current proposal seems wholly unsuitable. To conclude, I emphasise the fact that the subject holding serves as both a business premises and a home. Measures to minimise the level of disruption and to mitigate the severity of the impact caused to the business, by the scheme, will be essential and early discussions to address this will be welcomed. Yours faithfully Batcheller Monkhouse	066	**Business and Dwelling** Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 22 of the **Onshore Works Plans - Revision B [PEPD-005]**. The Land Interest own and operate a campsite affected by the proposed cable route (Works No.9 – Cable Installation (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. The proposed construction methodology in this location is horizontal directional drilling, therefore it is not proposed that the campsite will be impacted by open-cut trenching. The campsite is however located directly to the west of a field for a proposed construction compound (Works No.10). The Land Interest have recently constructed a dwelling on site (directly to the east of the A283), where they reside. The curtilage of the dwelling is not within the Order Limits. The dwelling is located in the region of 60m from the Order Limits boundary. Open-cut trenching is not proposed in this location. **Engagement** The Applicant has been in correspondence with the Land Interest and their agent since January 2021. A site meeting was initially held in February 2021, where the Land Interest expressed concerns about the project boundary intersecting with their dwelling (which was under construction at the time). Subsequently, the boundary in this location was amended to avoid the dwelling on site, which was consulted upon in October 2022. A further site meeting was held in July 2022 where the Applicant explained that the section of cable route in this location is intended to be installed by HDD methodology and no open trenching is proposed. At the site meeting and subsequent consultation event in November 2022, the Land Interest raised additional concerns about the impact of the construction compound and associated works on their business and future potential for a garage development on site. The Applicant has reviewed the Horsham Planning website and is not aware of a planning application for a garage extension that intersects with the Order Limits. The original planning documents for the dwelling (DC/17/0397) contain a provision for a garage to the north-east of the dwelling, and an annex to the west. The Applicant understands these elements of the construction have not yet been completed.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			1: Order Limits The Applicant seeks to negotiate rights for an easement to lay a cable within the proposed Order Limits. The easement will be finalised taking no greater area than required. Land owned by the Land Interest is required for construction and operation of the cable , for which a package of Cable Rights and a Cable Restrictive Covenant are sought. The land is required to be included in the Applicant's DCO at this stage to ensure that all required rights for construction and operation are secured. If a voluntary land agreement is secured within the Land Interest compulsory acquisition may not be required. As explained by the Applicant in the **Statement of Reasons** (Paragraphs 9.11.7-9.11.9) **[PEPD-012]**, not all of the land owned by the Land Interest within the Order Limits will need to be permanently acquired. Flexibility is sought to enable the construction of works anywhere within the area identified for those works on the **Onshore Works Plans – Revision B** **[PEPD-005]**, within which area there will be a circa 40m construction corridor and 20m permanent easement corridor, save for in certain circumstances such as where HDD techniques are employed. The final routing is not fixed and will be dependent upon matters such as pre-construction surveys. As explained in the paragraphs in the Statement of Reasons, the Applicant will seek the minimise the extent of permanent rights required by taking temporary possession first of the wider construction corridor and then permanently acquiring the rights required over the narrower area when the location is known. The Applicant welcomes the Land Interest's willingness to discuss matters further and confirms that it will engage further with the Land Interest regarding the refinement of the final land area and appropriate and reasonable mitigation measures during construction of the project to minimise disturbance to the Land Interest. **2: Environmental** Environmental impact matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-2 'Environment and disturbance'**. Air quality and dust emissions relating to construction activities and the construction access roads in the Washington Caravan and Camping Park area have been considered in **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]**. The duration of activities on the nearby Trenchless Crossings ID TC-16 and ID TC-17 is estimated to be 9.9 ad 5.9 weeks respectively. Therefore, construction activities are very short term in the locality of the Washington Caravan and Camping Park.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			Air dispersion modelling of emissions to air from the Trenchless Crossing activities have indicated that air quality impacts on receptor R45 (representing the Washington Caravan and Camping Park) are negligible. The qualitative dust assessment concluded that with no mitigation in place the risk of dust soiling from construction traffic is high. This finding that without dust controls there would be a High risk of impact has informed the dust management measures that would be implemented as part of the Proposed Development (see Table 19-36 of **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]**). These measures are expected to ensure that the risk of impact is reduced to negligible levels. These measures have informed the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** and are secured via Requirement C-24 of the **Draft Development Consent Order (DCO)** **[PEPD-009]**. Unmitigated noise from activity within the construction compound is likely to give rise to high magnitude levels of sound on occasion. Although these levels are not likely to give rise to significant effects with respect to noise exposure, the representation regarding customers adverse reaction to the construction noise, and the commercial implications of this, is acknowledged as a risk. Further information regarding noise is also provided in the **Table 6-8 'Noise'**. Points raised regarding impacts to business and the assessment is provided in **Table 6.17 'Impacts on businesses and the local economy'**. Embedded mitigation such as localised screening, shrouding of generators, and appropriate positioning of noisy activities within the compound will all be included in the Noise and Vibration Management Plan, part of the stage specific Code of Construction Practice, secured by Requirement 22 of **the Draft Development Control Order (DCO)** **[PEPD-009]**. Mitigation is further discussed in point **2: Compensation** below. The Environmental Statement has assessed the effects of each compound for during construction. Though impacts will arise, there are no significant effects arising from noise, dust, ecology, Public Rights of Way and traffic impacts when considering the embedded environmental measures secured in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**, the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** and the **Outline Public Rights of Way Management Plan** (PRoWMP) **[APP-230]**. It is noted that each of the above plans will be subject to submission of stage specific details for approval by the relevant authority, including WSCC for the CTMP and PRoWMP and the relevant planning authority for the CoCP. This is as per the **Draft DCO** **[PEPD-009]** Requirements 24, 20, and 22 respectively. **2: Compensation** There will be a period of time where a proposed construction compound and associated activity will take place on other land, adjacent to the campsite. The Applicant will consider specific appropriate and reasonable mitigation measures during construction to minimise disturbance to the caravan pitches and field camping pitches, to be discussed in due course.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			The Applicant will seek to engage further with the Land Interest regarding detailed construction access design and accommodation works in accordance with the **Outline Code of Construction Practice** **[PEPD-033]**. However, if the business operated by the Land Interest incurs financial losses that can be shown to be caused as a direct consequence of the temporary use of the land and construction works, claims for compensation will be assessed and considered in accordance with the provisions of the Compulsory Purchase Compensation Code. Claims for disturbance will be considered where reasonable, substantiated and shown to be caused as a direct consequence of the temporary use of the land and the works in accordance with the relevant legislation. **3: Compound** **Landscape and Visual Impacts** The likely significant landscape and visual effects of the Proposed Development have been assessed in the Environmental Statement **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**. Wherever practicable, likely adverse effects have been avoided or minimised through embedded environmental measures in the design of the Proposed Development, taking into account the findings of the Environmental Statement, consultation with stakeholders and national and local policy requirements. The landscape and visual effects are set out in Table 1-47 of **Appendix 18.4: Visual Assessment, Volume 4** of the ES **[APP-170]**. Significant effects on visual receptors at Washington Caravan Park, resulting from the Proposed Development, have been identified. These effects will be limited to the construction phase and the impacts will be temporary, as presented in the **Outline Landscape and Ecology Management Plan (LEMP]** **[APP-232]** (LEMP). It is noted the LEMP plan will be subject to submission of stage specific details for approval by the relevant authority. This is as per the **Draft DCO** **[PEPD-009]** Requirement 12. Please see the comment in Point 2 above regarding compensation. **4: Safety of Access** Please see the comment in Point 2 above regarding mitigation. Access junction A-39 will serve the Washington construction compound via the A283. As detailed within the **Outline Construction Traffic Management Plan (CTMP)** **[PEDP-035a]**. All temporary construction accesses will be designed to follow design standards contained within the Design Manual for Road s and Bridges and to meet relevant West Sussex County Council requirements.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			Given the nature of this junction, the Applicant is also engaged with West Sussex County Council with the aim of agreeing a suitable design for this junction prior to the end of the examination. Detailed design of these accesses will form part of stage specific CTMP secured pursuant to requirement 24(1)(a) of the Draft DCO **[PEPD-009]**.

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Table LI82 Applicant's Response to Henry Adams LLP (Henry Adams LLP) on behalf of Mssrs Hutchings (Mssrs Hutchings) [RR-259]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI82.1	The Hutchings Family own [REDACTED] and are directly affected claimants. As their land agent, I have made RWE aware of particular sensitivities that impact this farm. I have therefore been surprised that RWE have not accounted for these concerns, but have instead presented a one-size-fits-all style of agreement upon all landowners. For example: - RWE is aware that the cable route goes through known areas of former landfill. Nevertheless, they have presented terms suggesting that the landowner shall be liable for the cost of dealing with any contamination that RWE might find on the route. It's inevitable that contamination will be found. It would otherwise be left in the ground with no consequences for the landowner, so it's grossly unreasonable to expect the landowner to pay for the clear-up costs as a direct result of RWE disturbing the landfill. - As agents, we have been in dialogue about two important development opportunities. House builders have proposals to develop the farmyard area and we have requested that the cable route does not impact on this area. Heads of terms have also been signed for the installation of a third-party solar farm, which is directly on the route. The cable route remains too close to the proposed development site, and the proposed terms are incompatible with a solar farm. - This is already a difficult agricultural holding. It is very wet and low-lying land and therefore only suitable for grassland. Furthermore, the farm is dissected by multiple railway lines, that has split the farm into 4 blocks. Access from one block to another is via railway crossings, or a narrow underpasses. As a consequence, this is a very labour-intensive farm, partly because of the time it takes to travel, but also because operations can only be undertaken by small and narrow machinery suitable for the underpasses. The above problems are made significantly worse because RWE have proposed to go through the middle of the farmland blocks, instead of tight up against the railway. This splits the farm from 4 blocks into 7 and appears to be unnecessary and wasteful. The retained land will become too small and inefficient to farm. Despite raising these concerns with RWE and their agents on multiple occasions, the route of the cable has not altered. We have sought minor amendments to the route in the form of a few meters, not miles. - The terms of the proposed easement are unreasonable. RWE seek to minimise their exposure to compensation by restricting liability to areas they have 'broken' or 'opened up'. We are nervous that the inefficiencies in being able to farm the rest of the land will be disregarded as a consequential loss and therefore not compensable in the normal way. - With other development expected, it is inevitable that other services or indeed new drainage ditches might need to across the easement strip. The proposed easement terms are too restrictive in allowing any such work or activity. RWE want to approve all works, regardless how minor they may be, and have not given any assurances that ditches, cables etc will be permissible. - RWE are trying to impose unreasonable terms that effectively allow them to cheat BNG by planting trees anywhere on the farm. They are not proposing to pay landowners for the loss of farmland, and there are no	067	**Context** The Land Interest owns pasture land which is affected by the proposed cable route (Plots 2/34, 3/2, 3/5, 3/14, 3/15 & 3/25, 4/1, 4/2, 4/3, 4/4 & 4/5). The Land Interest also owns pasture land which is affected by the proposed temporary cable duct stringing (Plot 3/7), proposed temporary storage of excavated materials (Plot 3/12), and proposed temporary construction access (Plot 2/35). In addition, part parts of the Land Interest's land holding are affected by operational access (Plots 2/41, 2/42 & 3/6). Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet's 2 & 3 of the **Onshore Works Plans - Revision B [PEPD-005]**. The Land Interest runs a pedigree Charolais beef cattle (business) across approximately 90 hectares (223 acres) of permanent pasture lying to the East of the River Arun that is bisected by the Arundel Junction railway line. Within Plot 3/14 (that adjoins the farmyard area), an HDD entry / receptor pit will be situated to drill under the railway and the Black Ditch. **Accommodation Works** The proposed cable route does not go through the middle of the farmland blocks, nor does it go tight up against the railway. The Applicant will seek to engage further with the Land Interest regarding detail construction access design and accommodation works in accordance with **Outline Code of Construction Practice (CoCP) [PEPD-003]**. **Contaminated Land Liability** The relevant representation raises concerns regarding the Applicant "seeking to impose costs on the landowner for clearing up any contamination found on the route". This is incorrect. The Applicant requests known information relating to contamination is provided by the Land Interest, and the draft voluntary agreements contain appropriate provisions which govern liability in relation to contaminated land. The voluntary agreements have been issued to the Land Interest' agent and the Applicant will progress discussions with the Land Interest. **Proposed Solar Farm** The Applicant has been informed by the Land Interest that they are considering either extending the existing solar farm or a new solar farm scheme which if it were to go ahead would affect Plots 3/24 & 3/25 and therefore could conflict with the Proposed Development. The Applicant has been informed by the Land Interest's agent that the initial grid connection had been reserved for no sooner than 2026. The Land Interest's agent has indicated that any construction of a new solar farm or extension of the existing solar farm (located to the East of the proposed cable route) may not take place until after the Rampion 2 Project has been

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	opportunities to discuss or agree tree locations and species in advance. Most areas of this holding is not suitable for trees because it would threaten it's rare bird life. Highways England have fully disclosed, mapped and consulted on their BNG locations with infrastructure schemes in the area and we therefore question why RWE have not done the same. - We note that the environmental statement justifies the abandonment of a route through the Norfolk Estate, because it would threaten a site where curlew have been released under a Natural England licence. [REDACTED] hosts a variety of very rare wetland birds including 16 curlew, the Black Tailed Godwit, Cattel Egret and Little Egret. We are not aware that the impact on these birds have been assessed in anyway and cannot understand why the cable has been allowed in such a sensitive location, yet avoids other areas where the bird life is less important. - In light of the above, there are many concerns about this application by RWE. The overriding concern is that RWE have not made slight amendments to the route, or small changes to the proposed easements, to reflect the individual concerns of the claimants. - We wish to point out, that Key Terms were issued in March 2023, but we said negotiations would be meaningless until we saw the actual proposed easement document. There has been resistance by RWE to release this document, and these have only been circulated in the last month. The smallprint within the documents are very worrying and were not relfected in the key terms. - We request that the easement strip is made narrower (perhaps this is possible now that few turbines are proposed), that it is laid tight up against the railway and assurances are given concerning its compatibility with the proposed developments on the farm. The impact to the rare bird life must be clearly understood and mitigated. The proposed easement terms must be fair on the landowners and should not attempt to impose costs on the landowners, or limit compensation beyond what is normally considered to be reasonable.		completed. This development has not been included within the ES Cumulative Effect Assessment (CEA) as this was not submitted at the time of DCO submission, the methodology for the CEA has been described in **Appendix 5.3** of the ES **Cumulative effects assessment detailed onshore search and screening criteria [APP-127]**. **Proposed Housing Development Area** The cable construction corridor (Plot 3/14) currently adjoins the farmyard area (along the Eastern boundary of Plot 3/14). The Land Interest's agent has requested that the cable route does not impact upon the Land Interest's proposals to develop the farmyard area (and additional land predominantly land to the South East of the farmyard area). The Applicant understands that the Land Interest's proposed farmyard development area is outside of the Proposed DCO Order Limits, with no overlap and therefore the Applicant does not consider that there will be an impact. **Voluntary Agreement** The Applicant issued Heads of Terms to the Land Interest on 28th March 2023. The Applicant commenced discussions with the Land Interest's agent in September 2023 before issuing the draft option agreement and draft deed of easement on 29th September 2023. The Land Interest's agent issued comments on the Heads of Terms on 18th October 2023, to which the Applicant responded in full on 5th February 2024. If Compulsory Powers are utilised, affected Land Interests will be compensated in accordance with the provisions of the Compensation Code. Claims for disturbance and crop loss will be considered where reasonable, substantiated and shown to be caused as a direct consequence of the temporary use of the land and the works in accordance with the relevant legislation. **Environmental and Ecological Constraints** The restrictive covenants over the Easement Strip have been included to mitigate the risks associated with cable protection. Normal agricultural operations are therefore likely to be permitted and any requests by the Land Interest for permission to install drains or pipes, build ditches or field shelters over the Easement Strip, will not be unreasonably withheld or delayed. The Applicant will necessarily require further detailed information to be able to understand the potential risks to the cables before making an informed decision on particular requests. Terrestrial ecology and nature conservation matters raised within this Relevant Representation have been covered in **Table 6-2 'Environment and disturbance'** with further information provided in the **Table 6-3 'Ecology'.** Cable route alternatives and sifting matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-4 'Route / Alternatives'**.

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Table LI83 Applicant's Response to Batcheller Monkhouse (Batcheller Monkhouse) on behalf of Muntham Farm LLP (Muntham Farm LLP) [RR-260]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI83.1	06 November 2023 Our Ref: DNB528/HC The Planning Inspectorate National Infrastructure Directorate Temple Quay House Temple Quay Bristol BS1 6PN Dear Sirs, Mr R Heath - Muntham Farm LLP Rampion 2 response to section 56 Notice I write in response to the section 56 Notice, received in relation to the Rampion 2 project. I am writing on behalf of my client, Mr Robert Heath, to give notice of his interest, in land affected by the scheme. I outline below, the key concerns of the route. It is important to note that Muntham Farm has a number of individual interests, each will be affected to varying extents, along the route. These include the farm business; two equestrian businesses, operated by third parties; a clay shooting ground, let and run by a tenant; alongside a shoot that is managed in hand by Mr Heath, himself. 1) Farm Business Muntham Farm comprises 380 hectares (940 acres) of predominantly arable land. A substantial proportion of the cable is set to run through Muntham Farm, which, in terms of farming activities, will result in significant crop loss, alongside the wider disruption that a scheme of this scale will inflict. It should also be noted however, that the holding has also historically been involved in agri-environmental schemes. The compatibility of these, alongside the construction phase of a project such as Rampion 2, puts the suitability of these in jeopardy. Such schemes require a commitment for a set term, which the temporary loss of land as a result of the project will nullify. While the amended route is welcomed, and will reduce the impact on these concerns, mitigation measures and carefully considered reinstatement works, will remain vital, to keep impact to a minimum. 2) Livery Yard's In addition to the farm business, two equestrian businesses operate from the holding. One of these is let to Mr Heath's daughter, and one, to a third party. Both these businesses provide an important source of additional income to Muntham Farm LLP. The noise, machinery and traffic movements generated as a result of Rampion 2, will conflict with the existing use of this area, of exercising and the turnout of horses. This presents safety issues for both horses and owners and is not feasible. One of the attractions of the livery business at Muntham Farm, is the location of the stables. Riding on roads is becoming increasingly dangerous, and the opportunity for owners to exercise horses off road at Muntham Farm attracts business. The proposed route will, on safety grounds, negate this opportunity, meaning there is a real risk that owners will move their horses elsewhere. This in turn will threaten the livery business's ability to continue, while furthering the loss of income to Muntham Farm LLP. 3) Gun Club South Downs Gun Club operate from an area north of the holding. While the amended route increases the distance between the Project and the gun range, it is imperative that this use is identified, to ensure the necessary provisions are implemented; to both minimise disruption to the Gun Club, as a business, and to ensure the safety of all parties at all times. The rental of the ground to the gun club is another example of diversification for Muntham Farm LLP, and therefore the proposed route poses a twofold loss in income: for both the gun club and Muntham Farm LLP. It must be recognised that in terms of both the gun club and livery businesses, reputation and repeat custom contributes towards their success. The risk of disturbance, interruption or temporary closure, will lead to the loss of custom and have longer lasting	068	Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 14, 15, 16, 17, 18 and 19 of the **Onshore Works Plans – Revision B [PEPD-005]**. The Land Interest owns arable and pasture land affected by the proposed cable route (Works No.9 – Cable Installation works (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. The agricultural land affected by Works No.9 forms part of a wider land holding, and includes Plots 14/6 and 15/1, shown coloured blue on the **Land Plans Onshore – Revision B [PEPD-003]**. There is a proposed construction access (Works No.13 – Temporary construction access) that affects the edge of a field to the west of the land holding, for which Construction Access Rights are sought. The rights are required to provide construction access from Long Furlong directly to the cable route at Sullington Hill (to the north). The strips of agricultural land affected by Works No.13 include Plots 17/2, 18/5 and 16/1 as shown coloured green on the **Land Plans Onshore – Revision B [PEPD-003]**. The land holding includes an existing road leading to Muntham Farm which is accessed directly to the west of Horsham Road. As shown on Sheet 17 of the **Onshore Works Plans – Revision B [PEPD-005]**, this road has been included within the Order Limits as Works No.15 for which permanent operational access rights are sought. Where the road to Muntham Farm meets with a farm track, both construction access and operational access (Works No.14) rights are sought, to provide access to the cable corridor. The track and agricultural land affected includes Plots 17/1 and 18/9 as shown coloured blue on the **Land Plans Onshore – Revision B [PEPD-003]**. The rights sought are defined in Schedule 7 of the **draft Development Consent Order (DCO) [PEPD-009]**. The Applicant notes that the Land owned by the Land interest to the east of the cable route is occupied by a clay shooting club business. The Applicant understands that there are also equestrian yard uses to the east of the cable route, although it is not known if these are commercial businesses as information relating to this has not been provided. The equestrian facilities and shooting club are not directly impacted by the Proposed Development but construction traffic concerns have been raised by the Land Interest. **Route Selection Background** The Applicant has been in regular correspondence with the Land Interest and their agent since August 2021.

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	repercussions, that extend beyond completion of the works. 4) Shoot A shoot is currently run by Mr Heath each year, situated to the south of Muntham Farm. The proximity of the proposed route to the pheasant pens, will mean that this operation is no longer viable. The pens are located on this part of the holding due to the suitability of the ground cover and landscape. Therefore, there is no option to relocate this activity elsewhere on the holding, contributing towards a further loss incurred by Mr Heath. To conclude, the impact of Rampion 2 on Muntham Farm LLP is considerable. The multiple interests, as well as the length of the route that it is proposed will cross the holding, makes the need for early discussions, to adopt measures that will mitigate the impact of the scheme, critical. Yours faithfully Batcheller Monkhouse		A site meeting was initially held in August 2021 to discuss the original PIER cable route proposal. Later meetings were held between May and August 2022, following the conception of the Longer Alternative Cable Route ("LACR") and Alternative Access ("AA") affecting their property, where the Land Interest expressed concerns about the direct route of the proposed cable across the farm primarily due to the impacts on the operational of a clay shooting Gun Club which is located on part of the land. The Land Interest was collaborative and worked with the Applicant to provide information leading to a variation of the existing route following site meetings in December 2022 and February 2023, which was put forward for a localised public 28-day consultation in March 2023. Subsequently, the route was amended to take a route further to the West (the Land Interest's preferred route), minimising impact on the farm where possible. The construction route and operational access route remained within scope. **1: Compensation** The Applicant welcomes comments from the Land Interest that the amended route is preferable. If Compulsory Purchase Powers are used, affected Land Interests will be compensated in accordance with the provisions of the Compensation Code. Claims for disturbance and crop loss will be considered where reasonable, substantiated and shown to be caused as a direct consequence of the temporary use of the land and the works in accordance with the relevant legislation. Once the cable has been constructed and the land reinstated, the land can be returned to normal use. The Applicant is willing to discuss appropriate and reasonable mitigation measures across the property during construction. **Accommodation Works** The Applicant will seek to engage further with the Land Interest and their tenants regarding detailed construction access design and accommodation works in accordance with **Outline Code of Construction Practice (CoCP) [PEPD-033]**. **Fencing** - The Applicant confirms that the construction area within the Order Limits will be fenced off for the duration of construction. **Crossing/ Access Points** - Accommodation works (to include access points over the construction area) to seek to mitigate the impact will be discussed with the Land Interest in due course.

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			As the project progresses to the point of entry being taken for construction, the Applicant is keen to have ongoing discussions with the Land Interest to understand how best to mitigate any temporary severance of land during the construction period, which can include temporary accommodation works (e.g. fences, gates and crossing points). Also the Applicant will continue to engage to further understand the Land Interest's specific requirements to accommodate the tenants farming and business operations and minimise disturbance wherever possible. **1: Reinstatement Works** Reinstatement commitments are contained with the **Outline Construction Method Statement [APP-255]** and **Outline Soils Management Plan [APP-226].** **2: Livery Yard** The Applicant understands the livery yard itself is not impacted by (Works No.9), as the proposed cable route passes to the west. The proposed construction access within this location (Works No.13 and Works No.14), will intersect with the access route to the livery. The Land Interest has raised concerns regarding construction traffic impacts on equestrian users occupying it's equestrian facility due to those users riding on the road proposed for use as a Construction access. The Applicant notes that this road is used by a number of existing businesses with varying types and sizes of vehicles including HGV's and large agricultural vehicles transporting manures. Whilst the Applicant acknowledges that there will be an intensification in use, this will be temporary. As noted above, the Applicant will seek to engage further with the Land Interest and their tenants regarding the Proposed Project in accordance with the **Outline Code of Construction Practice (CoCP) [PEPD-033]**. Please refer to the Applicant's comment in Point 1 regarding compensation, accommodation works, mitigation and reinstatement for direct losses by the Land Interest, insofar as losses are suffered by the Land Interest as opposed to its tenants. **3: Gun Club** The Gun Club is not impacted by Works No.9. However, the proposed construction access within this location (Works No.13 and Works No.14), will intersect with the access route to the Gun Club. As mentioned above, three routes were consulted upon in this location, including LACR 1C located to the east of the Land Interest's title. Following discussions with the Land Interest and investigations into the operation of the Gun Club, the route was amended to follow LACR 1D, which was identified as being outside of the 'range' of typical

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			shooting activities from the Gun Club using information on 'firing range distances' provided by the Gun Club. Please refer to the Applicant's comment in Point 1 regarding compensation, accommodation works, mitigation and reinstatement for direct losses by the Land Interest, insofar as losses are suffered by the Land Interest as opposed to the operator of the Gun Club.. **4: The Shoot** The Applicant understands that the shoot is held once a year. Further information will be requested from the Land Interest to discuss potential alternative arrangements in the context of the final alignment of the cable construction corridor, construction activities and the timing of those activities. Please refer to the Applicant's comment in Point 1 regarding compensation, mitigation and reinstatement in respect of 'Shoot A Shoot', insofar as losses are suffered by the Land Interest. .

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Table LI84 Applicant's Response to Nicola Keogh [RR-271]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI84.1	I am extremely worried about the close works proposed to Brookside Caravan Park at Lyminster for the next stage of the Rampion 2 The caravan park has been there for over 60 years and is very peaceful with a lot of wildlife. If the access road proposal is near to the North side of the caravan park there will be a lot of noise and dust. The farmer that owns the field, ploughs and harvests crops, which acceptable and only for a short while. The Rampion work will go on for months and I believe an access road will be built to be used on a regular basis.	N/A	The Applicant notes the issues raised in this relevant representation. All environmental matters provided within this Relevant Representations have been responded to by the Applicant in **Table 6-9 'Brookside Caravan Park'**.

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Table LI85 Applicant's Response to Batcheller Monkhouse (Batcheller Monkhouse) on behalf of Patrick John Marcel Hutchinson (Patrick John Marcel Hutchinson) [RR-289]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI85.1	The main concerns regarding the impact Rampion 2 will have on the property: 1) A remedial drainage scheme will be required if the construction works have an impact on the natural drainage of the land. 2) Horses are kept on the land which may be spooked by the works potentially causing injuries. 3) The construction area will need to be appropriately fenced off for horses. 4) Access points must be provided during the works over the construction area to access the severed land on the northside. 5) A significant amount of grazing land and exercise space for the horses will be lost for the duration of the construction works which may not easily be replaced by renting in additional land elsewhere. 6) The extent of the area of land required for the Option Agreement by Rampion is too large and should be reduced to match the DCO application boundary.	069	**1: Remedial Drainage** The Applicant has considered to the impact to land drains and will apply C-28, detailed in the **Commitments Register** **[APP-254]** (an updated version of this document is available at Examination Deadline 1). It reads as follows: 'Particular care will be taken to ensure that the existing land drainage regime is not compromised as a result of construction. A specialist drainage contractor / consultant will be engaged prior to construction to develop the pre- and post-construction drainage plan on agricultural land. Land drainage systems will be maintained during construction and reinstated on completion. Temporary cut-off drains will be installed parallel to the trench-line, before the start of construction, to intercept soil and groundwater before it reaches the trench. These field drains will discharge to local drainage ditches through silt traps, as appropriate, to minimise sediment release.' **5: Compensation** If Compulsory Purchase Powers are used, affected Land Interests will be compensated in accordance with the provisions of the Compensation Code. Claims for disturbance and crop loss will be considered where reasonable, substantiated and shown to be caused as a direct consequence of the temporary use of the land and the works in accordance with the relevant legislation. Once the cable has been constructed and the land reinstated, the land can be returned to normal use. Please see further information described in paragraph 4.5.51 of the **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**. The Applicant is willing to discuss appropriate and reasonable mitigation measures across the property during construction. **6: Order Limits** Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 21 of the **Onshore Works Plans – Revision B** **[PEPD-005]**. Land owned by the Land Interest is required for construction and operation of the permanent cable easement (Works No.9), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. There is also a proposed operational access (Works No.15), for which future operational rights are sought to access the cable route from the south. Those rights are defined in Schedule 7 to the **draft Development Consent Order (DCO)** **[PEPD-009]**.

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			The Applicant seeks to negotiate rights for an easement to lay a cable within the proposed Order Limits. The easement will be finalised taking no greater area than required. The land is required to be included in the Applicant's DCO at this stage to ensure that all required rights for construction and operation are secured. If a voluntary land agreement is secured within the Land Interest compulsory acquisition may not be required. The plan provided with the Heads of Terms for the Option Agreement details the Order Limits with a green line which is the area over which the project would be seeking powers. The Option Agreement plan is therefore not wider than the DCO Order Limits. As explained by the Applicant in the **Statement of Reasons** (Paragraphs 9.11.7-9.11.9) **[PEPD-012]**, not all of the land owned by the Land Interest within the Order Limits will need to be permanently acquired. Flexibility is sought to enable the construction of works anywhere within the area identified for those works on the **Onshore Works Plans – Revision B [PEPD-005]**, within which area there will be a circa 40m construction corridor and 20m permanent easement corridor, save for in certain circumstances such as where HDD techniques are employed. The final routing is not fixed and will be dependent upon matters such as pre-construction surveys. As explained in the paragraphs in the Statement of Reasons, the Applicant will seek the minimise the extent of permanent rights required by taking temporary possession first of the wider construction corridor and then permanently acquiring the rights required over the narrower area when the location is known. **2, 3 & 4: Accommodation Works** The Applicant will seek to engage further with the Land Interest and their tenants regarding detailed construction access design and accommodation works in accordance with **Outline Code of Construction Practice (CoCP) [PEPD-033]**. As the project progresses to the point of entry being taken for construction, the Applicant is keen to have ongoing discussions with the Land Interest to understand how best to mitigate any temporary severance of land, which can include accommodation works (e.g. fences, gates and crossing points). The pasture land is part of a larger field/ land holding which is outside of the Order Limits. The Applicant will continue to engage further to understand the Land Interest's specific requirements to accommodate the grazing/ land management operations and minimise disturbance wherever possible. **Fencing** - The Applicant confirms that the construction area within the Order Limits will be fenced off for the duration of construction.

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			Crossing/ Access Points - Accommodation works (to include access points where reasonably and practicable over the construction area) to seek to mitigate the impact will be discussed with the Land Interest in due course. The Applicant welcomes the Land Interest's willingness to discuss matters further and confirms that it will engage further with the Land Interest regarding the refinement of the final land area and appropriate and reasonable mitigation measures during construction of the project to minimise disturbance to the Land Interest.

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Table LI86 Applicant's Response to Peter Christopher May [RR-300]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI86.1	My concerns are: Using Dragons Lane for access and ongoing maintenance for Oakdean substation . Using anything other than light vehicles. The lane is a private unmade,single track road and is a bridleway. It is not suitable for HGV`S as it is narrow in places. Two properties, [REDACTED] form the boundary of the lane. As convented outbuilding there are no footings. There is a high risk of structural damage both properties. Families and animals use the lane purely as access to their property. There is also a very real danger to people and resident wildlife. Please can you confirm our concerns will be taken into serious consideration. Chris and Elaine May [REDACTED]	070	**Dragons Lane Operational Access** The Applicant has provided a response in Action **Point 18 and** 19 regarding further information on the use of Dragons Lane, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (**Document Reference 8.25**) submitted at Examination Deadline 1. Dragons Lane is within the Order Limits for an operational access (Works No. 15) as shown on Sheet 31 of the **Onshore Works Plans – Revision B** **[PEPD-005]**. The Land Interest has private rights of access over Dragons Lane, (Plots 31/8, 31/9, 31/11, 31/12, 31/13) shown coloured blue on the **Land Plans Onshore – Revision B** **[PEPD-003]** which provides access to their residential property. A small section of the Land Interest's freehold Title is also within the Order Limits (Plot 31/14), shown coloured blue on the **Land Plans Onshore – Revision B** **[PEPD-003]** as it overlaps with the proposed operational access. The Applicant is therefore seeking to acquire a package of Operational Access Rights over Dragons Lane, in respect of Plots 31/8, 31,9, 31/11, 31/12, 31/13), over which the Land Interest has private rights of access to their residential property, as well as Plot 31/14 that the Land Interest owns freehold. Operational access rights are defined in Schedule 7 of the **Draft Development Consent Order (DCO)** **[PEPD-009]** which in summary comprise rights of access with or without vehicles and equipment: " for the purposes of operation, maintenance and decommissioning of the authorised development". Examples of the rights are expanded on further in Schedule 7. Consequently, the Applicant is not applying to use the Lane for construction access. The Dragons Lane access (A-58) is defined in Table 23-25 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** as an operational access only for the onshore cable route shown as part of Work No. 15 sheet 27 of the **Onshore Works Plans – Revision B** **[PEPD-005]**. There is no route between Dragons Lane and the proposed substation. Paragraphs 23.4.21 and 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** describe the expected operational and maintenance phase activities which includes periodic testing of the cable through attendance by up to three light vehicles such as vans in a day at any one location. Unscheduled maintenance or emergency repair visits for the onshore cable will typically involve a very small number of vehicles, typically light vans. Infrequently, equipment may be required to be replaced, then the use of an occasional HGV may be utilised, depending on the nature of the repair. (Paragraph 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**).

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			In exceptional circumstances during unscheduled maintenance or operational faults, an HGV may be required to support cable repair works. This would be an unlikely worst case scenario that could involve the need to replace a section of cable, for which HGV access may be needed for materials or equipment. In the unlikely event of such a major cable fault in this area, the fault would be investigated and a suitable vehicle arranged for the repair taking into account the access parameters along Dragons Lane. The Applicant is aware of a narrow passage along Dragons Lane that may be prohibitive for HGV-vehicles in the unlikely worst case scenario that could involve the need to replace a section of cabler. HGVs are not anticipated to need to negotiate Dragons Lane for a reasonable worst case scenario. Operational accesses have been identified for light vehicle access for cable maintenance and inspection purposes. Dragons Lane is assessed to provide suitable access for these purposes. **Traffic** The Applicant notes the issues raised in this relevant representation. Matters relating to using Dragons Lane for access has been responded to by the Applicant in **Table 6-1 'Traffic'**. For the avoidance of doubt, however, the Applicant can confirm that Dragon Lane will provide a route to Access A-58 which is for operational purposes only. It will therefore not be used by construction traffic. **Ecology** Terrestrial ecology and nature conservation matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-2 'Environment and disturbance'**, with further information provided in the **Table 6-3 'Ecology'**.

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Table LI87 Applicant's Response to Peter Christopher May (RR-300)

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI87.1	My concerns are: • Using Dragons Lane for access and ongoing maintenance of substation. • Using anything other than light vehicles. • The lane is a private unmade, single track road and is a bridleway. It is not suitable for HGV`s. It is narrow in places. • Two properties, ours (The Old Dairy) and our neighbour's (Dragon`s Barn), form the boundary of the lane. • As converted outbuildings there are no footings. There is a high risk of structural damage to both properties. • Families and animals use the lane purely as access to their property. There is also a very real danger to resident wildlife. Please can you confirm our concerns will be taken into serious consideration.	071	Dragons Lane is within the Order Limits for an operational access (Works No. 15) as shown on Sheet 31 of the **Onshore Works Plans – Revision B [PEPD-005]**. The Land Interest has private rights of access over Dragons Lane, (Plots 31/8, 31/9, 31/11, 31/12, 31/13) shown coloured blue on the **Land Plans Onshore – Revision B [PEPD-003]**, which provides access to their residential property. A small section of the Land Interest's freehold Title is also within the Order Limits (Plot 31/14), shown coloured blue on the **Land Plans Onshore– Revision B [PEPD-003]** as it overlaps with the proposed operational access. The Applicant is therefore seeking to acquire a package of Operational Access Rights over Dragons Lane, in respect of Plots 31/8, 31,9, 31/11, 31/12, 31/13), over which the Land Interest has private rights of access to their residential property, as well as Plot 31/14 that the Land Interest owns freehold. Operational access rights are defined in Schedule 7 of the **Draft Development Consent Order (DCO) [PEPD009]** and in summary comprise rights of access with or without vehicles and equipment: "*for the purposes of operation, maintenance and decommissioning of the authorised development*". Examples of the rights are expanded on further in Schedule 7. Consequently, the Applicant is not applying to use the Lane for construction access. Operational access (for light personnel or 4x4 vehicles) will be required throughout the project's lifetime, for inspections and maintenance of the cable route. It is anticipated that the Applicant would need to access the lane by either walking or driving, to carry out occasional maintenance responsibilities. **Traffic** The Applicant notes the issues raised in this relevant representation. Matters relating to using Dragons Lane for access has been responded to by the Applicant in **Table 6-1 'Traffic'**. For the avoidance of doubt, the Applicant can confirm that Dragon Lane will provide a route to Access A-58 which is for operational purposes only. It will therefore not be used by construction traffic.

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Table LI88 Applicant's Response to Batcheller Monkhouse (Batcheller Monkhouse) on behalf of R G Nash & Sons (R G Nash & Sons) [RR-306]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI88.1	06 November 2023 Our Ref: DNB252/HC The Planning Inspectorate National Infrastructure Directorate Temple Quay House Temple Quay Bristol BS1 6PN Dear Sirs, [REDACTED] Rampion 2 response to section 56 Notice I write on behalf of The Nash Family, in response to the section 56 Notice, received in relation to the Rampion 2 project. I take this opportunity to first, give notice of my clients' interest, as freehold owner of [REDACTED]. It is important to emphasise that the Holding, which is to be affected by the scheme, is not only a farm, but also a family home and business. The principal concerns remain as follows:	072	The Applicant has been in regular correspondence with the Land Interest and their agent since February 2021. Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 27 and 28 of the **Onshore Works Plans – Revision B [PEPD-005]**. The Land Interest owns and operates a mixed dairy, beef and arable farming business located to the east of Bines Green (B2135), with the entrance to the farm directly from Bines Green. The eastern section of the farm's pasture land is affected by the proposed cable (Works No.9 – Cable Installation works (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. The area of the farm affected by Works No.9 includes Plots 27/28 and 28/2 shown coloured blue on the **Land Plans Onshore – Revision B [PEPD-003]**, extending to in the region of 17% of the total area. There is a proposed construction access (Works No. 13 – Temporary construction access) that affects part of the existing driveway (the entrance to the farm), part of an existing track, and agricultural land within the farm, for which Construction Access Rights are sought. The area of the farm affected by Works No.13 includes Plots 28/5, 28/11, 28/9, 28/8 shown coloured green on the **Land Plans Onshore – Revision B [PEPD-003]**. There is also a proposed soil storage area (Works No. 11 – Temporary soil storage) affecting agricultural land, for which temporary possession powers are sought. The area of the farm affected by Works No.11 includes Plot 28/3 shown coloured green on the **Land Plans Onshore – Revision B [PEPD-003]**. A proposed construction and operational access (Works No. 14 – Construction and operational access) affecting agricultural land and an existing track, for which Construction and Operational Access Rights are sought. The area of the farm affected by Works No.14 includes Plot 28/4 and 28/7 shown coloured green on the **Land Plans Onshore – Revision B [PEPD-003]**. Rights are defined in Schedule 7 of the **draft Development Consent Order [PEPD-009]**. There are a number of dwellings and businesses located on the farm which are accessed from the B2135 (from the existing farm entrance) along the driveway into the farm. These dwellings are businesses are located outside of the Order Limits. The proposed operational access uses the existing entrance and follows the main driveway into the farm, entering the farmyard, before turning southwards to reach the cable. The construction access also utilises the existing entrance into the farm, using a proportion of the main driveway, before turning southwards.
LI88.2	1) Business [REDACTED] is a productive, profitable dairy farm. The need to maintain full access at all hours, is essential, in order to facilitate livestock		**Impacts and Mitigation on Agricultural Uses**

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	movements, milk collection, the transporting of feed and forage, veterinary emergencies and staff access. It is also important to understand that plans are in place to expand the herd and associated infrastructure, and the proposition of Rampion 2 puts the feasibility of these plans in jeopardy. Mitigation measures to minimise disruption during the construction phase are of upmost importance and early conversations to address and constructively implement such measures are imperative. The nature of the business means that the land and buildings are integral to one another, and for the business to remain commercially viable, access between the grazing land and milking parlour cannot afford to be compromised.		As the project progresses to the point of entry being taken for construction, the Applicant is keen to have ongoing discussions with the Land Interest to understand how best to mitigate any temporary severance of land during the construction period, which can include temporary accommodation works (e.g. fences, gates and crossing points). In this location, the cable construction corridor runs through the eastern section of the land holding. The Applicant will continue to engage to further understand the Land Interest's specific requirements to accommodate the dairy farm operations and minimise disturbance wherever possible. This could include crossing points to be agreed with the Land Interest across the cable installation area (Works No.9) to ensure parts of the field will remain available for use. Detailed cable routing will be refined further to pre-construction surveys. **Compensation** If Compulsory Purchase Powers are used, affected Land Interests will be compensated in accordance with the provisions of the Compensation Code. Claims for disturbance and crop loss will be considered where reasonable, substantiated and shown to be caused as a direct consequence of the temporary use of the land and the works in accordance with the relevant legislation. Once the cable has been constructed and the land reinstated, the land can be returned to normal use. **Accommodation Works** The Applicant will seek to engage further with the Land Interest and their tenants regarding detailed construction access design and accommodation works in accordance with **Outline Code of Construction Practice (CoCP) [PEPD-033]**. **Fencing** - The Applicant confirms that the construction area within the Order Limits will be fenced off for the duration of construction. **Crossing/ Access Points** - Accommodation works (to include access points over the construction area) to seek to mitigate the impact will be discussed with the Land Interest in due course. The Applicant will discuss in more detail Accommodation Works with the Land Interest to ensure access is facilitated to any severed land. Where severed land cannot be farmed the Applicant would be willing to negotiate an appropriate compensation claim for disturbance. **Maintaining Access to the Farm**

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			Mindful of residents' concerns, the Applicant updated the **Outline CoCP [PEPD-033]** at the pre-examination deadline. Additional detail has been provided at Section 5.7.10 to explain how construction and access will be managed. In summary: • Access restrictions will be kept to a minimum, with a diversion provided if possible; • Contractors will work with local stakeholders and accommodate reasonable requests for access; • The trench will be covered outside of working hours, and access will be restored in emergencies; and • Closures will be communicated to local residents in advance. The Applicant is willing to discuss appropriate and reasonable mitigation measures across the property during construction.
LI88.3	2) Land Drainage Land drainage is a matter that needs prioritising now. The cable route and associated works will undoubtedly damage and disturb land drains. Rampion 1 engaged a drainage consultant from the outset and amelioration schemes were designed and installed ahead of the construction phase. If this matter is not addressed ahead of the works commencing, the damage, and in turn, reinstatement requirements, will last far beyond completion of the construction phase. Alongside the productive grazing platform, [REDACTED] also an extensive area of water meadows. This area lends itself well to agri-environment schemes and is currently included in the Adur River Restoration project, as part of the Landscape Recovery scheme, under ELMS. In conjunction with a number of other existing landscape features, such as hedges and mature trees, the environmental value of the Holding is also prominent. Clearly from both a commercial sense, and an environmental perspective, carefully planned reinstatement works will be essential to both secure the future of the business and to preserve the character and landscape of the Holding.		The Applicant notes the issues raised in this relevant representation. Water environment matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-2 'Environment and disturbance'**, with further information provided in the **Table 6-14 'Flooding and Flood Risk'**. The **Outline Code of Construction Practice (CoCP) [PEPD-033],** **Outline Landscape and Ecology Management Plan (LEMP) [APP-232]** and **Outline Soils Management Plan (SMP) [APP-226]** describe the measures to reinstate all temporary working areas to their prior condition. The Applicant has considered to the impact to land drains and will apply C-28, detailed in the **Commitments Register [APP-254]**. It reads as follows: 'Particular care will be taken to ensure that the existing land drainage regime is not compromised as a result of construction. A specialist drainage contractor / consultant will be engaged prior to construction to develop the pre- and post-construction drainage plan on agricultural land. Land drainage systems will be maintained during construction and reinstated on completion. Temporary cut-off drains will be installed parallel to the trench-line, before the start of construction, to intercept soil and groundwater before it reaches the trench. These field drains will discharge to local drainage ditches through silt traps, as appropriate, to minimise sediment release.' In relation to reinstatement planning another measure (C-19) has been put in place to ensure that open cut works are carefully planned and completed in as short a time frame as practicable. Also C-148 sets out that during construction, a programme of visual inspections will be undertaken at appropriate points downstream to ensure that works in the vicinity of the Adur tributaries are appropriately monitored.
LI88.4	3) Access It is important to emphasise that the main farm access is a single track road with few passing places and it will not function with both farm and construction traffic flowing in different directions. While access has been discussed, it is important that this is not overlooked.		As detailed within the **Outline Construction Traffic Management Plan (CTMP) (PEDP-035a)**, all temporary construction accesses will be designed to follow design standards contained within the Design Manual for Road s and Bridges and to meet relevant West Sussex County Council requirements. Detailed design of this access, including any appropriate traffic management controls for the lane itself, will form part of stage specific

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			CTMP secured pursuant to Requirement 24(1)(a) of the **Draft Development Consent Order [PEPD-009]**. **Maintenance of Access** Mindful of residents' concerns, the Applicant updated the **Outline Code of Construction Practice [PEPD-033]** at the pre-examination deadline. Additional detail has been provided at Section 5.7.10 to explain how construction and access will be managed. In summary: - Access restrictions will be kept to a minimum, with a diversion provided if possible; - Contractors will work with local stakeholders and accommodate reasonable requests for access; - The trench will be covered outside of working hours, and access will be restored in emergencies; and - Closures will be communicated to local residents in advance.
LI88.5	4) Other Matters I also take this opportunity to reiterate that the converted Sussex Barn, located to the eastern edge of the farm buildings, provides living accommodation for Michael and Gillian Nash. The proposed cable route runs within close proximity of the dwelling and I therefore emphasise that additional sensitivity towards this is essential. The need for more renewable energy, that Rampion 2 aims to deliver, is fully recognised and accepted by our client. In return however, it is asked, as a matter of priority, that Rampion 2 demonstrates an intent to understand the workings and requirements of my clients' business. As of yet, there has been little evidence of this, and the project continues to impose a great deal of uncertainty and a real threat to the future of the Holding. The Nash family would sincerely welcome constructive discussions that work towards addressing these key concerns and delivering a project that strives to mitigate the level of disruption to their business.		Please see the Applicant's response to reference **LI88.2** for comments on compensation**.** The Applicant notes location of the dwellings, which are located outside of the Order Limits. The Applicant notes the Land Interest's concerns regarding the residential accommodation on site. Section 5.4 of the **Outline Code of Construction Practice (CoCP) [PEPD-033]** provides information on management measures and mitigation for noise and vibrations. A Noise and Vibration Management Plan (NVMP) will be produced to secure appropriate measures for the stage specific Code of Construction Practice, which will be developed in accordance with the **Outline CoCP [PEPD-033]**. Paragraph 5.4.8 of the **Outline CoCP [PEPD-033]** also provide details of Best Practicable Means that will be adopted to minimise noise during construction. Matters relating to construction practices and project commitments are raised within this Relevant Representation have been responded to by the Applicant in **Table 6-2 'Environment and disturbance'**. Noise and vibration matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-2 'Environment and disturbance'**, with further information provided in the **Table 6-8 'Noise'**. **Further Discussions** The Applicant seeks to negotiate rights for an easement to lay a cable within the proposed Order Limits. The easement will be finalised taking no greater area than required.

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			The Applicant met with the Land Interest and the Land Interest's agent via a Teams meeting in October 2023 to seek to instigate the negotiations of the Heads of Terms. During the meeting in October 2023 the Applicant outlined a number of concerns about impacts to the dairy farm that can be improved with mitigation measures. The Applicant welcomes the Land Interest's willingness to discuss matters further and confirms that it will engage further with the Land Interest regarding the refinement of the final land area and appropriate and reasonable mitigation measures during construction of the project to minimise disturbance to the Land Interest.

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Table LI89 Applicant's Response to Knight Frank (Knight Frank) on behalf of R J Goring, R H Goring, P Goring, Wiston Estate Partnership (R J Goring, R H Goring, P Goring, Wiston Estate Partnership) [RR-307]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI89.1	Introduction Wiston Estate extends to over 2,420ha centred on Wiston House and Park, which has been owned by the Goring family since 1743. The estate comprises, 1765ha of farmland, 495ha woodland, 100ha parkland, 70ha of quarries and 24ha of ponds and wetland. There are 106 in-hand and let residential properties, 11 in-hand and let farms, and 22 commercial units. Wiston Estate Winery and the Chalk Farm Restaurant sit to the south of the estate and are managed directly by the estate. There are 12ha of vineyards and the estate produces award winning wines, winning the Wine GB "Winery of the Year" twice. Wiston Estate directly employ 80 number of people and support over 20 number of businesses operated by others. The proposed Rampion Scheme bisects the property from east to west and runs for more than 5km representing over 15% of the onshore cable route. The impact both on the overall estate and estate tenants and their associated business will be severe and will restrict the economic development of the estate in perpetuity.	073	The Wiston Estate owns land affected by circa 3.9km of proposed cable route which accounts for circa 10% of the total onshore cable route length. The land subject to the proposal is arable and pasture land and forms a proportion of the total Estate land holding. The 3.9km of proposed cable route affects three main farming occupiers (two larger tenancies and one smaller tenancy). There are number of residential tenants whose rights of access are by construction access and cable installation proposals on these farms and elsewhere on the route. Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheets 22, 23, 24 and 25 of the **Onshore Works Plans [PEPD-005]**. Arable and pasture land is affected by the proposed cable works (Works No.9 – Cable Installation works (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. There are proposed construction access areas (Works No.13 – Temporary construction access) that affects roadside verges and one strip of agricultural land, for which Construction Access Rights are sought. In addition, an area of pasture land is affected by the proposed Works No.12 (Temporary duct stringing area) A proposed construction and operational access (Works No.14) affects two existing tracks, for which Construction and Operational Access Rights are sought. There are several proposed areas to be affected by operational access (Works No.15), including field boundaries with existing gateways, for which permanent operational access possession powers are sought. In addition, pasture land is affected by Works No.10 (Temporary construction compound), for which temporary possession powers are sought. Rights are defined in Schedule 7 of the **draft Development Consent Order (DCO) [PEPD-009]**.
LI89.2	2. The Route The route is damaging to both the estate, their farm tenants, the South Downs National Park, the visual landscape, and the wider environment. Alternative options were proposed which would have minimised the impacts, which have not been properly considered.		The Applicant notes the issues raised in this relevant representation. Route alternatives and sifting matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-4 'Route / Alternatives'**. Environmental impact matters provided within this Relevant Representation, including Landscape and visual impact, have been responded to by the Applicant in **Table 6-2 'Environment and disturbance'**. The landscape and visual effects are assessed in **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** and the following are also relevant, providing

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			an assessment of viewpoints along the onshore cable corridor, effects on landscape and the South Downs National Park and effects on views and visual amenity experienced by people within the area. • **Appendix 18.2: Viewpoint Analysis, Volume 4** of the ES **[APP-168];** • **Appendix 18.3: Landscape Assessment, Volume 4** of the ES **[APP-169];** and • **Appendix 18.4: Visual Assessment, Volume 4** of the ES **[APP-170].**
LI89.3	3. Failure to Engage Sufficiently The level of response by Rampion to the Wiston estate's attempts to engage has been disappointing and below the standard to be expected for a project of this scale. There has been change of personnel both within the Rampion project team and their agents. Meetings have been postponed or rearranged at short notice, and actions have not been recorded or followed up sufficiently. Summary Heads of Terms for an option and easement were provided in Spring 23, however, there has been no meaningful discussion about these terms and their suitability for the Wiston Estate. Draft easement and option documents were not provided until late October 23. This is insufficient time for our client to review these and take professional advice, prior to the DCO process. Rampion stated that they would prefer to secure the agreement by private treaty and to date we have seen very little evidence of any meaningful negotiations.		**Consultation and Engagement** The Applicant has consulted (both statutorily and informally) with the Land Interest (Wiston Estate), over the period 2020 to 2024. A site meeting was initially held in September 2021, where the Land Interest expressed a number of concerns about macro and micro re-routing of the cable. These views were reiterated within various consultation responses. An alternative route, to the south of Washington village, was proposed by the Land Interest (in conjunction with other neighbouring landowners), which was given detailed consideration by the Applicant. The rationale and decision-making process for not progressing with the route to consultation was communicated verbally by the Applicant at a meeting in April 2022 and later by way of a presentation to the neighbouring landowner Washington Parish Council at a Parish Council meeting on 7th November 2022. Please see L189.4 for a summary of the rationale. In addition, in September 2021, the Land Interest proposed an alternative construction access route and removal of a proposed operational access. Subsequently both requests were factored into the design, and presented to the Land Interest at a site meeting in April 2022. Further site meetings were held in January 2023 and May 2023, with the Applicant is working in conjunction with the Land Interest and the farm tenants to understand the main concerns. **Voluntary Agreement – Engagement and Negotiation** Heads of Terms were issued to the Land Interest in March 2023. The agent has confirmed that the Land Interest would like to work collaboratively with the Applicant to agree terms. The Applicant has been in correspondence with the Land Interest, which included meeting with various tenants on site in May 2023. The Applicant has held on-line and in person meetings to discuss the Heads of Terms in detail on 23 January 2024 and 12 February 2024 respectively, with another meeting scheduled for March 2024.

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			The Applicant seeks to negotiate rights for an easement to lay a cable within the proposed Order Limits. The easement will be finalised taking no greater area than required. The Applicant welcomes the Land Interest's willingness to discuss matters further and confirms that it will engage further with the Land Interest regarding the refinement of the final land area and appropriate and reasonable mitigation measures during construction of the project to minimise disturbance to the Land Interest.
LI89.4	4. Failure to properly consider major and minor variations to the route Alternative options proposed have not been properly considered. For example, Washington and Wiston Parish Councils proposed a route which would avoid several dwellings. At a meeting Rampion suggested this proposed route would pass through an area of ancient woodland. Had they inspected the woodland they would have known that it is predominantly a single species woodland suffering from acute ash-die back disease. Minor route variations have also been proposed, largely which follows the southern edge of the A283. This route minimises the loss of long-term excavatable sand reserves and future vineyard field and the impact on farming operations. A minor variation was also proposed on a strip of land to the North of A283 adjacent to Rock Common, this avoids crossing the entrance to a sensitive rare breed sheep farm to the south. Neither of these proposals have been properly considered.		**Consideration of Minor Route Amendments** The Applicant has considered numerous alternatives on the Wiston Estate land and took forward one modified route amendment and one alternative access to be consulted on as part of the second Statutory Consultation (Oct - Nov 2022). Both of these were accepted as part of the final design. There were further reductions in the extent of the red line boundary south of the A283 compared to those proposed in the PEIR and a proposed access running to the South of Lower Chancton farm, and one running through Buncton Manor Farm were removed further to the first Statutory Consultation (July 2021 and reopened 2022). Further minor red line boundary reductions from tenants were also incorporated into the final design. The minor route variation which followed the southern edge of the A238 was considered but not taken to consultation because through engagement, the Environment Agency expressed concern over the proximity of the authorised landfill at Windmill Quarry which is situated along the northern edge of the A238. The Environment Agency noted that with the proposed route of the cable corridor being on the far side of the A238 and at least 50m from the boundary of the landfill there would not be any pollution control or permitting concerns. The minor route variation proposed on a strip of land to the North of A283 adjacent to Rock Common was considered but not taken to consultation because of technical engineering issue and health and safety concerns associated with existing utilities running through the narrow available area to North of A283. **Consideration of Major Route Amendments** The Applicant has considered potential major route alternatives for the cable that avoid the underground crossing of the Washington Recreation Ground, including the referenced 'southerly alternative' requested by the Parish Councils. The option was not presented or commented on in the Alternatives Chapter as it was deemed less suitable on technical engineering and environmental grounds, specifically in relation to the pinchpoint of the proposed route crossing a gas pipeline in the vicinity of the ancient woodland. Constrained access from the A24, and the need for existing tracks forming

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			the South Downs Way to be widened, with impacts on hedgerows was a further key factor. The Applicant attended and presented feedback on this decision at the Washington Parish Council meeting on the 7 November 2022. In summary, where possible, the Applicant has taken the route amendments forward to the final design stage. General comments on project route alternatives and sifting matters have also been set out in **Table 6-4 'Route / Alternatives'**.
LI89.5	5. Failure to provide sufficient information. Information has been requested and not been provided in its entirety, or insufficient information has been provided by Rampion and their agents. For example, detailed plans showing the proposed easement width have been requested. Without this information it is difficult to understand the long-term impact of the proposals. Heads of Terms were provided but lacked significant detail about the rights being sought. Terms offered include inappropriate matters such as the right to plant trees anywhere, at any time and the right to occupy any additional land. Clearly this is inappropriate on a landholding like Wiston Estate. Full legal documentation was only provided recently after the DCO application has been submitted.		The Applicant has consulted (both statutorily and informally) with the Land Interest (Wiston Estate), over the period 2020 to 2024. The Applicant has provided the following plans: - Relevant sheets of the **Onshore Works Plans [PEPD-005]** (via email on 18 October 2023 and on 02 February 2024); - Details of the proposed indicative HDD locations (via email on 04 May 2023), and with greater detail (via email on 02 February 2024). - The legal documentation to accompany the Head of Terms (via email on 18 October 2023). - Wiston Estate landownership plan and Tenant maps (via email on 15 March 2023). - The PEIR Works Plans from the 2021 Consultation (via email on 15 March 2023). - Indicative plan of the construction corridor within the Order Limits and details of accesses across the route (via email on 02 February 2024). The Applicant is continuing to engage with the Land Interest. Several meetings have been held (including on 23 January 2024 and 12 February 2024) and we continue to discuss the draft documentation for the voluntary agreement. Please see summary in **LI89.3** above. In our recent meeting (02 February 2024) we have been able to clarify a number of the Estate's queries, including construction corridor, proposed easement area, and the rights to re-instate trees.
LI89.6	6. Impact of the Route on potential Vineyard Land Wiston Estate has a successful vineyard and winery business. Plans showing the proposed vineyard fields have been provided to Rampion and have not been fully considered. It will be a significant financial risk to plant vines on land which could be disturbed in the future. In addition, within the easement documents it is not permitted to plant on the easement strip. Notwithstanding the damage to the soil structure and geology during construction. The proposals severely limit the future expansion of the winery business.		The Applicant understands that none of the land (at the Wiston Estate) which is affected by the proposed cable route is currently planted as a vineyard. The Applicant has received a plan identifying fields that the Wiston Estate have allocated for future vineyard locations. Two of these fields are impacted by the proposed cable route, one of which is currently used for grazing and one of which is currently in arable use. The restrictive covenant proposed for the permanent easement to protect the onshore cable prevents the planting of trees over the easement but permits agricultural activities to 0.9m. The Applicant understands that some vine variety roots may extend to below 0.9 m and in these cases the Applicant would not be likely to consent to planting plans. If however information is provided by the Land Interest to demonstrate activities are likely to comply with the agricultural activity restriction this

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			will be considered and if appropriate approved. Consent may also be given by the undertaker to certain activities. Further detail is provided in paragraphs 6.8.14, 6.9.40-6.9.46 of the **Statement of Reasons** **[PEPD-012]**. . Further to meetings held on 23 January 2024 and 12 February 2024, the Applicant is awaiting details of their proposals, layout and programme regarding the future development of the vineyard business and any commercial proposals from third parties to lease the land. Therefore, consideration can be given to the potential conflict with the Proposed Development and how impacts (were the expansion to progress) might be managed. It is noted by the Applicant that the fields proposed for vineyards are a substantial size and spacing is required between the rows of vines. The permanent easement is 20m width and therefore if there is any sterilisation this will only be a proportion of the land which the Applicant considers could be factored into the design and for example utilised for accesses.
LI89.7	7. Impact of the Route on Mineral Potential Wiston Estate owns Rock Common, a working quarry, which adjoins the route. Neighbouring land impacted by the proposals have the geological benefit of sitting upon significant reserves of building sand. Therefore, the proposed underground cable, which requires a 20-metre width corridor together with the potential severance, will sterilise in-situ sand in perpetuity.		Due to the location of the relevant Minerals Safeguarding Areas (MSAs) within West Sussex County Council (WSCC) area, it is not possible for the onshore cable route to avoid the MSAs, however the route proposed for the onshore cable has taken the MSAs into account and minimises the extent of impact on the MSAs by running in as direct a line as possible, or for soft sand, running adjacent to the A283 (an existing constraint to extraction). The onshore cable route therefore avoids needless sterilisation as a first principle. Paragraph 4.7.129 of the **Planning Statement** **[APP-036]** states that "*with regards to MSA the assessment has found that there will be a significant effect on the soft sand in the construction phase and operation and maintenance phase. In the context of WSCC Joint Mineral Local Plan Policy M9, it is identified that the soft sand MSA cannot be avoided, although the area potentially sterilised in the construction phase and operation and maintenance phase will be a very minor proportion of the overall area. There is a demonstrable overriding and urgent need for the Proposed Development (as demonstrated in Section 4.2 of this Planning Statement) and the infrastructure subject to the DCO Application is identified as a CNP (in line with NPS Draft EN-1 and Draft EN-3). There is no prospect of extracting the small area of sand resource (relative to the overall resource) prior to development and delivering a landform for a viable onshore cable corridor in this location. Furthermore, such an approach would not be environmentally feasible given the likely volume of sand that would need to be extracted and the volume of infill required to then provide a suitable landform for the onshore cable corridor. Additionally, there will be no barrier to a minerals developer accessing the soft sand resource following decommissioning. Therefore, it is considered that the Proposed Development accords with M9 and associated guidance*." **Chapter 24: Ground conditions** of the ES **[APP-065]** provides consideration of the reserves through a robust assessment based on the information available and, where appropriate, considers worst case scenarios for the quantum of minerals affected by the Proposed Development. It provides a worst case scenario for the minerals resource which may be sterilised, including the severance of deeper sand deposits for the full

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			operational life span of the project. The Applicant has also noted in the assessment that whilst the minerals resource may be sterilised for the duration of the construction and operational phases, it would become available again upon decommissioning (ie it is not being sterilised "in perpetuity").
LI89.8	8. Impact on Farm Tenants and in-hand farming operations The position of the route takes a significant amount of land out of agricultural use during construction. It also severs fields making large areas unusable. Some of the effected land is farmed by farm tenants, and the proposals will severely impact their livelihoods. The separation of the buildings from the main area of the holdings will have a detrimental effect on the ability to run the agricultural enterprises. Some of the farm tenants have had a poor experience with the project, having correspondence ignored and surveys being carried out without consent, which has resulted in concerns that farm tenants will not be treated fairly.		**Impacts and Mitigation on Agricultural Uses** As the project progresses to the point of entry being taken for construction, the Applicant is keen to have ongoing discussions with the Land Interest and their tenants to understand how best to mitigate any temporary severance of land during the construction period, which can include temporary accommodation works (e.g. fences, gates and crossing points). In this location the temporary cable installation area crosses through the centre of some fields/ pasture land. The Applicant will continue to engage to further understand the Land Interest's specific requirements to accommodate the tenants farming and business operations and minimise disturbance wherever possible. This could include crossing points to be agreed with the Land Interest across the cable installation area (Works No.9) to ensure parts of the field will remain available for use. Detailed cable routeing will be refined further to pre-construction surveys. **Compensation** If Compulsory Purchase Powers are used, affected Land Interests will be compensated in accordance with the provisions of the Compensation Code. Claims for disturbance and crop loss will be considered where reasonable, substantiated and shown to be caused as a direct consequence of the temporary use of the land and the works in accordance with the relevant legislation. Once the cable has been constructed and the land reinstated, the land can be returned to normal use. **Accommodation Works** The Applicant will seek to engage further with the Land Interest and their tenants regarding detailed construction access design and accommodation works in accordance with **Outline Code of Construction Practice (CoCP) [PEPD-033]**. **Fencing** - The Applicant confirms that the construction area within the Order Limits will be fenced off for the duration of construction. **Crossing/ Access Points** - Accommodation works (to include access points over the construction area) to seek to mitigate the impact will be discussed with the Land Interest in due course. The Applicant will discuss in more detail Accommodation Works with the Land Interest to ensure access is facilitated to any severed land. Where severed land cannot be

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			farmed the Applicant would be willing to negotiate an appropriate compensation claim for disturbance. **Maintaining Access to Farms** Mindful of residents' concerns, the Applicant updated the **Outline Code of Construction Practice (CoCP) [PEPD-033]** at the pre-examination deadline. Additional detail has been provided at Section 5.7.10 to explain how construction and access will be managed. In summary: • Access restrictions will be kept to a minimum, with a diversion provided if possible; • Contractors will work with local stakeholders and accommodate reasonable requests for access; • The trench will be covered outside of working hours, and access will be restored in emergencies; and • Closures will be communicated to local residents in advance. The Applicant is willing to discuss appropriate and reasonable mitigation measures across the property during construction.
LI89.9	9. Wet Pools Compound (Work No.10) Further information on the proposed Wet Pools Compound has been requested (shown on the plan as Work No.10). It is understood that this is a major compound. The estate has serious concerns over access, Highway safety and the impact on the local road network as the current access is poor. No detailed plans for the compound have been provided, including details of use such as working hours and access arrangements. The estate has previously put forward alternative sites for a compound, which have not been considered properly. It is understood that terms are going to be offered to both to the landlord and farm tenant for the compound, these have not been provided to date.		As part of the DCO process, a thorough assessment of the likely impact of traffic upon the local road network and highway assets during the construction phase of works has been completed. Traffic volumes in relation to compounds have been observed and presented in the **Chapter 23: Transport** of the ES **[APP-064]**. Further information has been responded to by the Applicant in **Table 6-2 'Environment and disturbance'**, with further information provided in the **Table 6-1 'Traffic'**. Given that this location acts as a temporary construction compound that Applicant is in the process of producing a highway access design for Access A-39, which will be compliant with requirements of the Design Manual for Roads and Bridges. This design will be discussed with West Sussex County Council and subject to an independent Road Safety Audit with an aim of reaching agreement on an acceptable layout prior to the end of the examination. Working hours have been provided in C-22 of the **Commitments Register [APP-254]** and have been updated at Examination Deadline 1 to include the use of shoulder hours. This will also be updated and secured via requirement 22 in the **draft DCO [PEPD-010]** in the **Outline Code of Construction Practice (CoCP) [PEPD-033]** at the next submission of this document.
LI89.10	10. Temporary Construction Accesses Temporary construction access (works no 13.) has been put through the middle of an arable field. This will make most of the field unusable for farming during the works. It has been requested that this access is moved to the field boundary. The proposed constructions access along the A283		Please see the Applicant's response to reference **LI89.8** above.

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	(Works No. 12) will also sever two working farms, residential properties, and commercial businesses.		
LI89.11	11. Manhole Covers It is understood that Manhole covers will be erected at 1km intervals on the route and access to these will be retained in perpetuity. No details of the location of these have been provided, if they are located inappropriately this may have significant implications for future land use.		The Applicant has explained to the Land Interest's agent that the location of the joint bays will be provided when detailed designs are produced. The future impact of the joint bays (manhole cover) above ground level has been accounted for within the Heads of Terms provided to the Land Interest.
LI89.12	12. Failure to cover professional costs Throughout the consultation and survey period, there has been a failure to cover the affected parties' professional costs. Much the wasted professional time has been spent following up the chaotic approach to matters. This is unequitable when Wiston Estate have only incurred these costs due to the proposed project.		The Applicant has responded directly to the Land Interest's agent on this point. The Applicant has committed to make payments towards professional fees as set out in the Heads of Terms for the Voluntary Agreement and in accordance with the RICS Professional Statement (Surveyors advising in respect of compulsory purchase and statutory compensation).
LI89.13	13. Compensation arrangements Without prejudice to the objections above the parties are seeking to agree a position relating to a number of points above as well a legal agreement and a compensation agreement. 14. Reservations Wiston Estate reserves the position to submit further information, issues, and objections as part of the DCO process.		The Applicant notes the points raised in this relevant representation and welcomes the opportunity to discuss the terms for a voluntary agreement. The Applicant has been having regular meetings with the Land Interest's agent to negotiate rights for an easement to lay a cable within the proposed Order Limits.

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Table LI90 Applicant's Response to Ruth Taylor [RR-335]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI90.1	Whilst I support the collective good of Rampion 2, it has been extremely difficult to positively engage in this process as an involved landowner, due to a non-cooperative experience with RWE Renewables' Land Agent – Carter Jonas. We have had poor engagement with many unanswered emails, an impasse to our legal representatives and non-payment of a contracted survey and access licence fee despite the use of our land over the last year. There has been no reasonable offer, or negotiation, of damages by removing the use of land during these construction works, only a generic 'Key Terms' document which is not relative to any of our true losses which we will incur. Legal fees will only be reimbursed after the signing of the Key Terms document, which in itself, is too late to the legal implications imposed within the document and is not relative to our losses. Also, these fees have been capped at a minimal amount and not reflective of the longevity of such a significant project. The duration of works has been significantly different to that presented to us at consultation. Until we receive the payment of outstanding fees owed and commence positive engagement with our legal representatives, then it remains extremely difficult for us to progress.	074	**Context** The Land Interest owns a single lane farm track (that leads to the Land Interest's land holding) which is affected by the proposed cable route (Plot 13/3), works no. 9 for a package of Cable Rights and a Cable Restrictive Covenant are required. Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 13 of the **Onshore Works Plans** **[PEPD-005]**. The proposed cable route will pass directly across farm track, which will necessitate a temporary closure whilst the ducting is laid through the track. The Applicant will seek to engage further with the Land Interest regarding detailed construction access design and accommodation works in accordance with the **Outline Code of Construction Practice (CoCP)** **[PEPD-003]**. **Survey Licence** The Applicant can confirm that the survey access licence fee was paid in December 2023. **Voluntary Agreement** The Land Interest owns an access track that the cable route crosses over (an area of approximately 6m x 40m). The Heads of Terms consideration reflects this. The Land Interest has stated that the Heads of Terms consideration does not reflect the true losses the Land Interest will incur. The Applicant met with the Land Interest in December 2023 and requested that the Land Interest provides further information in relation to the Land Interest's anticipated losses. The Applicant has yet to receive this information. The Applicant will shortly commence legal discissions with the Land Interest's legal advisors. The Applicant had in previous discussions with the Land Interest stated that the anticipated duration of the works may be for a period of 3 years. The Applicant has issued Heads of Terms for a voluntary agreement with an Option Period for 5 years. The Applicant informed the Land Interest of this in the meeting in December 2023.

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Table LI91 Applicant's Response to Suzy Smith Racing Ltd (Suzy Smith Racing Ltd) [RR-382]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI91.1	Suzy Smith Racing Ltd is a racehorse training facility and commercial breeding operation and has been based on Angmering Park, since 2020. There are approximately 30 horses at Lower Coombe Stables, a mixture of breeding mares and foals and racehorses in training. They are all thoroughbred horses, of high monetary value. Thoroughbred horses are highly strung in nature and racehorses in training are fit and strong. Racehorses in training are stabled at Lower Coombe Stables and trained extensively over Angmering Park Estate. Part of their training is carried out on purpose-built gallops, of which there are three (long, short and grass). These gallops vary in length and surface and are an essential training facility, used daily. The attached paddocks at Lower Coombe Stables are used by racehorses in training, as well as breeding mares and their foals. Suzy Smith Racing Ltd has had sight of the maps forming part of the Onshore Works Plan – Key Plan. The route of the proposed buried cables and associated accesses is going to create several main issues and impacts that will affect the day-to-day life of the business. The area titled 'work no 9 cable installation works (including construction and operational access)' presents an extremely dangerous issue/impact. Its boundary is right at the end of/cuts across the existing short gallop. To continue to use this facility alongside the proposed construction, would be extremely dangerous. This particular gallop is used extensively and is the facility of choice for the training of young horses, access to it is gained via Beech Copse. The long gallop is situated to the left of Tenantry Copse and access to it is currently along and crossing the area titled 'work 15 operational access.' To continue to use this long gallop, alongside the proposed construction, would present significant danger. Whilst potential alternative routes to access the gallop exist, the operational access still must be crossed. The area labelled 'work no 13 Temporary Construction Access' provides access from the A27 to 'work no 9' and both of these areas are extremely close to buildings situated at the entrance to Angmering Park, which provide staff accommodation. Construction work in this area will have an adverse effect on the day-to-day lives of the people residing in this accommodation and have a negative impact on their health and well-being. Angmering Park is an ideal setting in which to train racehorses and breed thoroughbreds. In the southeast there are very limited facilities and locations available to carry out such work. Some of the main issues and impacts to the business have been described above. The route of the Onshore Works Plan could quite easily result in potentially fatal accidents involving racehorses in training. Thoroughbreds are nervous in disposition and extremely susceptible to noise and disruption. Extensive disruption to breeding mares in foal, could result in them aborting. Therefore, the proposed route of Onshore Works Plan could easily result in closure or relocation for Suzy Smith Racing Ltd. The impact of this would result in the loss of jobs and opportunities for students seeking work experience. There would also be an impact for other local businesses who supply goods and services (equine vets and feed merchants).	075	**Context** The Land Interest holds a long-term commercial lease (as a tenant / occupier of the Angering Park Estate) of pasture land which is affected by the proposed cable route (Plot 8/3), works no. 09. Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 8 of the **Onshore Works Plans [PEPD-005]**. **Impact on business / use of the land** The cable construction corridor passes through paddocks used by the land interest for keeping horses. The Applicant understands that the cable construction corridor is in close proximity to gallops used by the business. (The Applicant understands that the Land Interest considers that the paddocks may not be useable for the grazing of their horses during the construction of the Proposed Project due to the characteristics of the horses. Further the land interest considers the short gallop in close proximity to the DCO red line to be unusable for the purposes of exercising the horses for the construction period of the Proposed Project. Through discussions between the Applicant and the Land interest it is considered by the Applicant that accommodation works and information provision may address some of the concerns such as: - appropriate fencing of the construction corridor to be agreed with the Land Interest to ensure separation of the works from the Land interests facilities e.g. Lower Coombe stables and fields being used for construction; and - notification of project construction programme 'windows' so that gallops can be used during periods of non-construction activity if deemed appropriate by the Land Interest e.g. there is potentially a period of no or very low activity between cable trenching and cable duct installation. This would be set out in the finalised version of the **Outline Code of Construction Practice (CoCP) [PEPD-003]** and stage specific construction method statement. The land interest notes that there are alternative long gallop facilities owned by the land interest "to the left of Tenantry Copse". This gallop was in close proximity to the original proposed cable route and proposed "Alternative Cable Route 04" as an option in the second Statutory Consultation (Oct-Nov 22), which ran alongside the gallop. The submitted Order Limits for the cable routeing avoids impacts on this gallop. Regarding the potential for health and wellbeing impacts to staff residing in the accommodation at Angmering Park from construction works (which includes trenchless crossings, it should be noted that the drilling duration at trenchless crossing 9 (in proximity to the staff accommodation) would last for 1.7 weeks. Such operations and associated disturbance would be temporary and transient in nature, thereby limiting the potential for health and wellbeing effects.

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			The remaining concern raised in relation to the use of the long gallop facility is the crossing of work 15 operational access. **Traffic Considerations** The operational access requirements, post construction, will be minimal and limited to light vehicles for maintenance use. As detailed in Section 4.8 in **Chapter 4 of the ES: The Proposed Development [APP-045]**, maintenance of the onshore cable is expected to be minimal. During operation and maintenance, periodic testing of the cable is likely to be required (every two to five years). This will require access to the link boxes at defined inspection points along the onshore cable route. Unscheduled maintenance or emergency repair visits will typically involve attendance by up to three light vehicles, such as vans, in a day at any one location. Infrequently, equipment may be required to be replaced, then the use of an occasional HGV may be utilised, depending on the nature of the repair. There is not likely to be a material increase in vehicle use compared with the existing use. Prior notification for scheduled maintenance visits will be discussed with the land interest for potential inclusion in a voluntary agreement. It is not therefore considered by the Applicant that there will be any impacts of the Proposed Development on the use of the alternative longer gallops. It is noted by the Applicant that this may have business organisation implications and that adjustments may need to be made. The Applicant understands that there may also be a requirement for alternative grazing. However, if the business operated by the Land Interest incurs financial losses that can be shown to be caused as a direct consequence of the temporary use of the land and construction works, claims for compensation will be assessed and considered in accordance with the provisions of the Compulsory Purchase Compensation Code. **Environmental and Ecological Constraints** General matters relating to construction practices and project commitments are raised within this Relevant Representation have been covered in **Table 6-2 'Environment and disturbance'.** Noise and vibration matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-2 'Environment and disturbance',** with further information provided in the **Table 6-8 'Noise'**. The works close to this business are cut and cover cable laying. The noise generation from the type of plant needed to progress the works in this location would be similar to telehandlers and tractors. Further socio-economic assessment outcomes have been responded to by the Applicant in **Table 6-7 'Impacts on businesses and the local economy'**.

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Table LI92 Applicant's Response to The Baird Farming Partnership (The Baird Farming Partnership) on behalf of The Baird Farming Partnership (The Baird Farming Partnership) [RR-387]

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LI92.1	The Baird Family remain supportive of the benefits that offshore wind energy can bring and are grateful for this opportunity to submit their further comments. The Bairds have been engaged in ongoing discussions with RWE and their agents and have submitted 2 objections in previous consultation rounds. A small number of objections have been overcome by RWE making acceptable changes to their proposals in so far as they affect Baird land. On 27 June 2023 the Bairds received letters in relation to negotiations concerning voluntary acquisition of rights. Upon taking advice the Bairds were simply not in a position to sign those heads of terms (HOTs) as they were severely deficient in detail, without prejudice and subject to contract for contracts they had not seen. On 3 November 2023 (being one working day before closure of consultation) the Bairds received the template contracts referred to in the earlier HOTs; being an Option for grant of easements and a Deed of grant of easement for a term of years. The Bairds want the Planning Inspectorate to be aware that they are ordinarily professional business people, managing a large Estate and are frankly unused to this manner of negotiation. Due to a lack of information from RWE they were not in a position to sign the June 27 letter and have not had time to consider the November 3 templates. It would therefore be enormously unjust for the Inspectorate to hand RWE CPO powers in the alternative of what must be fair negotiations; The Bairds are put at a severe disadvantage but remain willing to enter into rational dialogue with RWE. Here follows the matters that remain outstanding; these were raised through a formal objection lodged 16 September 2021 and directly with RWE and their agents. The inspectorate will need to refer to those earlier representations for the accompanying text. There has been extensive correspondence and site meetings have been held, but for whatever reason RWE has been unwilling to address these objections preferring instead that the Planning Inspectorate adjudicates to make a decision. 1. Impact of the proposed easement corridor for the cable on proposals for delivering Natural Capital improvements and the 'Weald to Waves' wildlife corridor. There seems to be a fundamental flaw in RWEs approach to the future management of the cable corridor; the assumption is that the pre-development landscape will be restored and maintained in that condition for the lifetime of the scheme. This is a daring supposition; Natural Capital markets are emerging with a whole range of eco-system services on offer from payments for carbon sequestration from tree planting, to biodiversity crediting and flood management, being just a few examples. The prohibition on any tree planting as described at paragraph 5.1.1 of the template Option for grant of easements is untenable for the Bairds, being in direct conflict with their landscape recovery ambitions and Government direction. The agreement states an outright prohibition on ALL trees, however, RWE's own Environmental Statement suggests that hazel coppice (for example) is acceptable on the easement strip. The Bairds suggest that a realistic and proactive approach is taken towards the presence of trees on the easement strip. It could be argued that applicants should specify the types of tree species that may be compatible with the cables, and the height (or diameter) that other trees may grow to before they pose a risk to the cable. But the	076	**Context** The Land Interest owns arable land which is affected by the proposed cable route (Plots 1/5, 1/6, 1/7, 1/8, 1/9, 1/10, 1/11, 1/16, 1/17, 1/18, 1/21, 1/24, 2/2, 2/4, 2/24, 2/25 & 2/26), including an area adjacent to the cable route proposed to be used for a temporary site compound (Plots 2/10 & 2/11). The land interest also owns arable land which is affected by the proposed temporary construction access (Plots 1/19, 1/22, 1/23, 125, 2/1, 2/27, 2/28), and proposed temporary storage of excavated materials (Plot 2/9). In addition, the Land Interest owns several farm tracks which are affected by proposed operational access (Plots 1/12, 1/13, 1/14, 1/15, 2/5, 2/6, 2/7, 2/8, 2/12, 2/23, 2/28, 2/29, 2/30, 2/31, 2/32). Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet's 1 & 2 of the **Onshore Works Plans [PEPD-005]**. The Land Interest owns the freehold of part of the intertidal and offshore area. From landfall, the proposed cable route passes through arable fields heading North to North East crossing under Ferrry Road, and the A259, passing to the East of Climping Park (and the campsite) and to the West of the Littlehampton Economic Growth Area (LEGA), through arable fields before crossing under the River Arun, and the railway line. In addition the temporary construction site compound will be located on arable land to the East of Church Lane adjoining (to the North of) Climping Village Hall, to the West of the proposed cable route, with access to the temporary construction site being gained off directly off Church Lane. **Consultation and Engagement** Initial contact with the Interested Party at a site meeting in August 2021. Discussions took place with regard survey requirements from May 2021 through to May 2022. On 9th May 2022 a meeting was held to discuss a number of items including: -the requirements for the compound and accesses -Landowners farm management -Hedgerow and Water crossings In March 2023 concerns associated with the compound location and land use aspirations were set out by the agent for the Land Interest Discussions were ongoing along with the requirement for additional surveys through to May 2023 when the Applicant set out reasons behind proposed siting and location of compound and cable route alignment and access routes. Discussions were ongoing through to October 2023. The Applicant would like to point out that the Land Interest was not under any obligation to reach agreement with the Applicant on a voluntary basis –prior to – the closure of the Section 56 Consultation Period. This was not a cut off date for

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	problem with rewilding is that acorns are planted by Jays, the wind blows willow and sycamore seeds, a regenerated landscape cannot be planned and mapped. The pragmatic solution is that the cable depths and specification of works will need to be altered to allow for tree growth in areas where the landscape use may change over the life of the scheme. It cannot be right for the Inspectorate to sign off a DCO that allows sterilisation of biodiversity for the life of the scheme. The Bairds are part of a cluster of land managers who have submitted a Landscape Recovery funding bid with the South Downs National Park Authority as applicant; this is investment readiness funding to explore these Natural Capital markets; a decision by DEFRA is imminently anticipated. The Bairds have for some time (commencing before RWE proposed entering their land) been exploring Natural Capital opportunities on their land. The Bairds have undertaken extensive biodiversity baselining and invested in marketing in readiness for mandatory BNG opportunities; their entire Estate (minus LEGA) has been submitted to be placed on Arun District Council's BNG register. Agricultural practices are adapting as land managers adjust to tackle the twin climate and biodiversity crises; this includes introducing practices such as Agro-Forestry, hedgerow restoration and orchard reinstatement; DEFRA's flagship Sustainable Farming Incentive (SFI) scheme offers significant grants to farmers for restoring such features, yet RWE propose to disallow engagement across a vast track of land and without compensation or robust justification. The Bairds met with RWE and their engineering consultants Woods to understand the rationale behind the decision point to disallow tree growth in any form along the easement corridor. The engineer brought a UK Gas Network pamphlet to demonstrate that there was a risk of pipe fracture from tree roots. The Bairds explained gas pipes and electric cables were not comparable examples; RWE could offer no other reasoning or evidence. The Bairds asked them to provide further evidence; they have failed to produce any. The Bairds do not believe that a professionally well laid cable of the right specification at an appropriate depth will be affected in any way by tree growth; in fact RWE are proposing to HDD install cables underneath some of the Bairds woodland which will continue to grow over the top of the cables. The Bairds suspect this measure is being introduced out of an abundance of caution by RWE and respectfully ask the Planning Inspectorate to intensely scrutinise this point including revisiting the specification and depths of cables where there is genuine intent to market land for biodiversity. The Bairds have raised a further concern about the proposals for the end of the scheme. There is uncertainty whether the cables will remain within the soil or will RWE have to recover all cables and ducts? Clearly it would be unconscionable to contemplate that the Planning Inspectorate would sign off a DCO that sanctioned biodiversity rich habitats, the preference must surely be that the ducting is designed to remain in situ and perhaps be used by future generation schemes? The Bairds believe this may be the reason why RWE are seeking to degrade biodiversity along the easement, in order to make extraction less damaging to wildlife, but the Inspectorate needs to consider very carefully the impacts of this. The further point that emerges here is one of management responsibility; suppose the Bairds do sell biodiversity credits, as they have for a long time intended, the expectations of the investor is that the land will be managed to restore biodiversity to offset loss elsewhere, they would not expect it to		engagement and the Applicant confirms that it will continue to seek to progress. The Applicant would like to reach a voluntary agreement with the Land Interest by the end of the DCO Examination process (if not sooner). The Relevant Representation states that the Heads of Terms were lacking in sufficient detail.. The Applicant considers that the Heads of Terms contains sufficient detail for Land Interests to make an informed decision to progress with voluntary agreements, however full documents have been issued to Land Interests who have indicated a preference to progress voluntary agreements, including the Bairds to provide any further detail on specific matters of interest. Further to the issuing of Heads of Terms in June 2023 and the later issuing of full draft Voluntary Draft option and deed of easement documents on 29th September 2023, the Land Interest's agent raised a number of queries on 18th October 2023. A response to these documents was issued to the Land Interest's agent on 5th February 2024. The Applicant is liaising with the Land Interest to arrange a meeting to discuss the documents and other matters raised in this Relevant Representation. **Concerns regarding restrictions on tree planting within the permanent Easement** The restrictions in relation to the prohibition on planting of trees in the 20m Easement Strip have been included as a measure to mitigate the risks associated with cable protection. This is a standard restriction for infrastructure easements and asset protection. Any detailed plans the landowner has for works or planting that could potentially conflict with the restriction are subject to obtaining prior written consent (such consent not to be unreasonably withheld or delayed). The Applicant emailed the Land Interest on 5th February 24 to explain the above. The Applicant stated that any requests for permission to build ditches, cables, or roads across (over the Easement Strip), will not be unreasonably withheld of delayed if the protection of the cable is not likely to be compromised. The Applicant requires detailed information to be able to understand the potential risks to the cables before making an informed decision on a case by case basis. Trees and hedgerows removed to facilitate construction of the onshore cable will be reinstated in their original location, as far as practicable. Details of reinstatement of various habitat types can be found in the **Outline Landscape and Ecology Management Plan (LEMP)** **[APP-232]**. Further information regarding impacts to trees has been provided in the **Table MPB3 'Ecology' (Document Reference 8.24)** and as part of the **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]**. As explained in the Outline Code of Construction Practice [PEPD-033] Section 4.10 "Reinstatement", no trees or woodland can be grown above the transmission cables to

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	be a barren landscape devoid of trees. RWE has not divulged how it expects the trees to be managed, on the Bairds 1.3kms corridor it presumably would have to be annually slashed, removing all growth in the process. The fact is were the Bairds to agree to sign the template Option for grant of easements document which specifically prohibits tree establishment, the Bairds would not be able to offer that land for Biodiversity Net Gain (BNG) marketing. There does not appear to be any compensation offered by RWE for this loss of revenue. Further, the Bairds have been in high level discussions with Southern Water (SW) regarding the installation of reed bed habitats to be used as bio filters. This involves extensive tracts of land, something that is in short supply in this densely populated area, which is in part why RWEs cable is proposing to come through their land. The SW proposal will require significant engineering to create terracing to manage water flows for quality control; this may involve lowering or most likely raising the land above the cables to allow these features to function. RWEs proposed prohibitions jeopardise delivery of this important societal capital project. In February 2020 following storm Ciara and more recently following storm Ciaran significant parts of the cable route have been inundated with over washed sea water. The Environment Agency strategy for the area includes the installation of new flood defence bunds. These are described in the River Arun to Pagham Flood and Coastal Erosion Risk Management Strategy at Table 6-11 Preferred Options for Strategy Implementation; "Construction of a new bund along the south side of the A259 will contain flood waters from the river and Climping, and a new low bund to reduce the 'back door' flood risk to Rope Walk in future years." This objective appears to be in direct conflict with the Option for grant of easements paragraph 5.1.2 "that the Grantor will not within 40 metres of the proposed location of the Cable shown by the red line on the Plan materially raise or lower the existing level of the surface of the land".		avoid the risk of tree root damage. The main concern of root growth near cables would be associated with damage to the ducting, cable insulation or cables, which also include fibre-optic data communication lines. **Environmental and Ecology Constraints** Terrestrial ecology and nature conservation matters raised within this Relevant Representation have been responded to by the Applicant in **Table MPB2 'Environment and disturbance' (Document Reference 8.24)**, with further information provided in the **Table MPB3 'Ecology' (Document Reference 8.24)**. It is further noted in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** that the approach to delivering BNG detailed in paragraph 5.3.6 prioritises identifying opportunities to deliver habitats on '*within the proposed DCO Order Limits or within 2km of them on land owned / managed by affected parties*.' The provision for BNG from the project will include a range of habitats including woodland, hedgerows, grasslands (including coastal and floodplain grazing marsh) and scrub (under an appropriate management prescription that would be required to ensure habitat condition, as well as cable protection). All of these habitats can be established over the cables other than woodland, however woodland glades and rides would be appropriate. The Applicant has communicated its willingness to enter into discussions relating to BNG credit provision to the Land Interest and will seek to further those discussions. Matters relating to construction practices and project commitments are raised within this Relevant Representation have been responded to by the Applicant in **Table MPB2 'Environment and disturbance' (Document Reference 8.24)**. The land interest has communicated to the Applicant it's general environmental and nature conservation land use aspirations for the future. The Applicant looks forward to discussing the detailed future proposals for schemes such as Weald to Waves to establish constraints and opportunities. Whilst there is a requirement for restrictions in the permanent easement area to protect the cable, the Applicant considers that the schemes are not incompatible in a wider context and the Applicant welcomes further discussions on the Weald to Waves project and further nature conservation opportunities such as BNG (see) below). s described in **paragraph 4.9.29** of the Environmental Statement - Volume 2 Chapter 4 The Proposed Development **[APP-045],** at the end of the Proposed Development, the cables will be made safe and will be left in situ to minimise environmental impacts associated with removal.
LI92.2	2. Impact of the cable route being adjacent to the Littlehampton Economic Growth Area (LEGA). LEGA remains a strategic housing development site of the Arun District Council's (ADC) local plan, programmed for delivery at the latter stages of the plan. The Bairds have been working closely with Savills as agents and developers to secure a promotion agreement to aid delivery. The site has many complex issues that		The Applicant considered the impact of the cable route on the Littlehampton Economic Growth Area (LEGA). In February 2022, following a design change review, the Applicant refined the cable route, re-aligning the whole section of the cable route in this area to the West to mitigate the impact on the LEGA.

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	require intricate exploration for due diligence purposes one of which has been uncertainty over the RWE cable route, depth and easement terms. At a meeting with ADC held 3 July 2023 it was agreed with the Chief Executive and Head of Planning that the Bairds would prepare a comprehensive masterplan for the whole allocation; this has been put in hand but the severance of the allocation caused by RWE's preferred cable route has jeopardised the viability of the whole scheme, making it impossible to secure any offers from promoters. This is further compounded by the uncertainty around what can be placed over the cable easement post works. In short RWE's Draft easement templates need significant amendments. Were the Bairds to sign them in their current form it would put at risk delivery of the important LEGA strategic housing allocation; they respectfully ask that the Inspectorate gives this matter close scrutiny.		Arun Local Plan Policy H SP2b allocates land in Littlehampton under allocation as SD4: Littlehampton-West Bank for residential development of 1,000 dwellings. The Proposed Development includes cable corridor through the land designated as an allocation. The **Planning Statement** **[APP-036]** paragraph 4.7.150 considers the impacts of the Proposed Development on the site allocated as SD4 and notes that there is no application for the site at present. An illustrative design for the allocation dated 2016 shared with the Applicant demonstrates that the area of the allocation crossed by the onshore cable route is proposed for open space/recreational provision (in the west of the allocated site), immediately to the west of the illustrative location of residential development associated with the allocation. Open space and recreational uses are likely to be compatible with a buried cable This illustrative design aligns with the requirements in the wording in Policy H SP2b SD4(h) which states "*provide open space at the western end of the allocation (north of Ferry Road and South of A259)*." The Applicant has widened the corridor to the west (modified route MR-02) as described in Section 4 of the PEIR SIR (RED, 2022), outlined in Section 3.4 of **Chapter 3 Alternatives, Volume 2 of the ES** **[APP-044]** as the western area of the site is identified for open space provision (in line with the policy requirements). The Planning Statement concluded that the Proposed Development would not preclude the site coming forward for the uses proposed in the allocation
LI92.3	3. Works Compound at 8a in Onshore Works Plan Page 1 of 18. RWE propose to construct a site compound on land the Bairds are promoting for residential development. Despite a professional and competent firm of developers (Hallam Land) having spent considerable time and expense in preparing this land for development, RWE have rejected its development prospects purely on the grounds that it is not allocated in the Arun Local Plan. This statement was not properly assessed or debated and failed to reflect on the specific issues of this local authority area. The LPA has a housing land supply that is substantially less than the required 5-years. As a consequence, land outside of allocated areas has an equally good chance in obtaining planning consent provided that certain criteria is met. Hallam believe this site has good prospects. It falls within an existing sustainable location, where there are existing public transport links, a primary school and employment opportunities. The proposed development could make a contribution to providing much needed market and affordable housing in the short term in a location consistent with the Local Plan's strategy, and there is the possibility that the site could be allocated in the emerging Local Plan Review as the Council will need to allocate sites that are available for development in the short and long term. The compound proposed by RWE will in effect sterilise the development potential of the site in the short term and prohibit the promotion of the site for residential development. As a potential development site, the land is sensitive to any contamination. The Bairds are concerned that RWE proposes to use the land for storing soil and arising from the project, which may introduce new contaminants (natural or manmade). RWE have rejected the proposal for them to undertake a baseline contamination survey prior to entry, and have not provided any method statements or undertakings as assurance		**Works Compound Development Potential and Engagement on Alternative Locations** The relevant representation point 3 states that the Land Interest believes the land proposed for the compound has housing development potential and that this will be sterilised by the Proposed Development. The land proposed to be used for the site compound is not allocated for housing in the Arun District local plan and no planning application has been submitted. The Land Interest states in the relevant representation that the Applicant declined to consider alternative locations for the construction compound. This is incorrect. When identifying potential temporary site compounds the Applicant took into consideration known constraints where possible. Land to the west of Church Street was designated as a site-specific strategic housing allocation prior to 2021 and therefore this area was avoided. The relevant representation states that locations to the north of the railway line were not considered for the temporary site compound. The temporary site compounds have been located strategically to each serve a section of onshore cable route during construction. A key requirement for the Proposed Development is a temporary site compound to serve as a base for the onshore cable installation works between the Landfall and the River Adur at a location south of the River Adur. A temporary site compound is best located near to a trunk road for ease of transport links, outside of designated areas, of sufficient size to fulfil its purpose and on flat land where possible to reduce the need for cut/fill.

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	that contamination will be monitored and dealt with appropriately. The Bairds asked RWE to consider alternative sites for this significant compound and they declined. Two site meetings were held, the Bairds impressed on RWE their concerns that there were better locations for the site compound that lay north of the railwayline. The entire scheme is to be serviced by just 3 major compounds, it makes no sense at all to have one at the extreme end of the scheme and severed by a busy railway, the logistical holdups to themselves and the pressure put onto local traffic make it a far more logical for RWE to secure a site north of the railway line. The Bairds absolutely object to RWE using their land as a works compound.		A site meeting was held on 15th March 2023 with the Land Interest where the following matters were raised: - Alternative compound location previously proposed by the Land Interest immediately to the north of the temporary site compound - Roueting of the proposed operational access in the context of the Land Interest's objectives for future development - Soil storage measures Applicant Commitments relating to contamination A letter from the Applicant dated 3rd May 2023 (see **Appendix 23 Letter to Mr Baird 03.05.23**) acknowledges that the Land Interest's preference was for the construction compound to be sited at a location to the north of the location identified by the Applicant. The Applicant considered the proposal, however, concluded that the choice of locations was constrained largely by the likelihood of flooding in this area. Over half of the compound area that the Land Interest identified is situated within Flood Zones 2 and 3. It is therefore less preferable than the Applicant's chosen compound location, due to this significant flood zone interaction (having a tidal flood risk across roughly half of the compound, and a fluvial risk across a third). The Applicant would therefore be required to demonstrate that other compound location options at lower flood risk are not feasible (but this is not the case, and so the Applicant is not able to demonstrate this). The Land Interest's land is designated as "Gaps Between Settlements" – Policy SD SP3 and a Biodiversity Opportunity Area (BOA) Policy ENV DM3 in the Arun District Local Plan 2011- 2031. These are not development allocation policies but environmental and countryside protection policies. Therefore, any development potential for the land would be longer-term, certainly post construction. The Applicant has therefore chosen the Land Interest's land for the site compound having regard to the absence of any strategic housing allocation or planning permission on the land,. . As the site compound will only be used during the construction of the scheme, the Applicant does not believe this will have an adverse effect on the Land Interest's intended future long term aspirations for the development of the land because the Applicant's temporary use of the land will have ceased before the development potential is realised. Route alternatives and sifting matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-4 'Route / Alternatives'**. Matters relating to construction practices and project commitments are raised within this Relevant Representation have been responded to by the Applicant in **Table 6-2 'Environment and disturbance'**. **The Outline Soils Management Plan (SMP) [APP-226]** provides the measures to be implemented to manage soil resources during construction of Rampion 2, including soil

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			handling, storage, and reinstatement, responsibilities, monitoring of compliance, and aftercare. Stockpiling of soil will be undertaken in line with the Defra Code of Construction Practice for the Sustainable Use of Soils and as defined in a Materials Management Plan (MMP) produced in accordance with the Definition of Waste: Development Industry Code of Practice (Version 2, March 2011). Soil handling and storage measures are detailed in the **Outline SMP** **[APP-226]** for topsoil and subsoil. Topsoil and subsoil will be stored separately, and subsoil will be placed on geotextile matting. The stage specific SMP(s) will interact with the MMP. A Qualified Person will review the evidence relating to the proposed use of materials on the site and if satisfied the development will comply with the Definition of Waste: Development Industry Code of Practice (DoWCoP), will sign a Declaration and submit this to the Environment Agency. The Declaration serves as notice to the Environment Agency that the development is complying with the Definition of Waste: Development Industry Code of Practice (DoWCoP).
LI92.4	4. Works number 9 & 7 Compound and Access; Onshore Works Plan Page 2 of 18. The Bairds maintain their objection to this route due to the significant impact upon their leisure and camping enterprises. Other matters that remain outstanding from that earlier objection are;		The campsite does not adjoin the proposed cable route. There is a proposed operational access route that passes along the Eastern boundary, bounded by a drainage ditch, of the campsite, works no. 15, (Plot 2/23). The Applicant will seek to engage further with the Land Interest regarding detailed construction access design and accommodation works in accordance with the **Outline Code of Construction Practice (CoCP) [PEPD-003]**. The socio-economic impact on leisure and business along the proposed cable route have been assessed in **Chapter 17 Socio Economics Volume 2** of the ES **[APP-058]**, which describes the assessment methodology. No significant transport or noise effects for tourism receptors are expected. The visual effects related to tourism receptors are temporary and only relate to the period during construction of the onshore cable corridor.
LI92.5	5. The Bairds would still like to see net gains, they think this is best practice and what is needed given the ecological emergency being faced. At a meeting with RWE it was suggested that they were prepared to deliver BNG as part of their corporate responsibility agenda.		The Applicant has committed to delivering BNG as a result of the Proposed Development. **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** describes the methods and results of the BNG calculations and the approach to delivering newly created and enhanced habitats to meet the target.
LI92.6	6. There should not be 50 metre wide easements across ditches, hedges or other sensitive areas unless this extreme width can be comprehensively justified.		The Relevant Representation raises a concern about the potential widening of the permanent easement at locations where trenchless crossings are required. The Applicant requires the flexibility of a wider corridor for Works No 9 to retain the ability to construct the preferred trenchless crossing alignment in compliance with existing commitments. As explained by the Applicant in the **Statement of Reasons** (Paragraphs 9.11.7-9.11.9) **[PEPD-012]**, not all of the land owned by the Land Interest within the Order Limits will need to be permanently acquired. Flexibility is sought to enable the construction of works anywhere within the area identified for those works on the **Onshore Works Plans** **[PEPD-005]**, within which area there will be a circa 40m construction corridor and 20m permanent easement corridor, save for in certain

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			circumstances such as where HDD techniques are employed. The final routing is not fixed and will be dependent upon matters such as pre-construction surveys. As explained in the paragraphs in the Statement of Reasons, the Applicant will seek to minimise the extent of permanent rights required by taking temporary possession first of the wider construction corridor and then permanently acquiring the rights required over the narrower area when the location is known.
LI92.7	7. The land in front of St Mary's Church has been identified as a possible works access area; this is community land that has royal celebration trees planted upon it. Should this access route be used the trees must be protected.		The Relevant Representation raises a concern about an access point from the Proposed Development close to St Mary's church. The October 2022 second statutory consultation provided for an operational access in close proximity to the south of St Mary's church. The Applicant removed this access route from the Order Limits and it is no longer required.
LI92.8	8. The Bairds have informed RWE that they have nationally rare indigenous Black Poplar trees growing on their land. Without prejudice to other concerns and mitigations identified within this representation, the Bairds want cast iron assurances that should it be comprehensively demonstrated that these trees need to be removed, then they shall be relocated as close to their current positions as possible with the work carried out by competent professionals.		As stated in Section 4.5 of the **Outline Landscape and Ecology Management Plan (LEMP) [APP-232]**, all hedgerows temporarily lost would begin reinstatement within two years of its loss, with planting occurring during the first available planting period once reinstatement has begun this might mean that planting of a hedgerow begins slightly after this due to seasonal constraints. These hedgerows would be monitored twice yearly in years one, two, three, four and five, and annually (in spring / summer) in years six to ten following reinstatement. The **Outline Code of Construction Practice (CoCP) [PEPD-033]** identifies black poplar for particular consideration.
LI92.9	9. Many of RWEs work and access areas are on land where the Bairds have for a long time been establishing wildlife and hedgerows. Removal of these will set back nature recovery by 20 years so these features should be fully avoided and alternatives to their removal must be a feature of the DCO.		As stated in Section 4.5 of the **Outline Landscape and Ecology Management Plan (LEMP) [APP-232]**, all hedgerows temporarily lost would begin reinstatement within two years of its loss, with planting occurring during the first available planting period once reinstatement has begun this might mean that planting of a hedgerow begins slightly after this due to seasonal constraints. These hedgerows would be monitored twice yearly in years one, two, three, four and five, and annually (in spring / summer) in years six to ten following reinstatement.
LI92.10	10. Most of the Baird's land is drained with complicated drainage arrangements, more information can be provided if required. RWE will need to contemplate installing new drains each side of working areas to maintain those systems during the work phase and reinstate the system upon completion, bearing in mind that the land will need time to settle before installation. In addition to the drainage problems, RWE has failed to consider or offer compensation for the severance of land that will be caused by the scheme. The Bairds do not have the luxury of accessing their fields from multiple sides, the effect of the trenches will mean large parts of the farm will be severed from access. It is therefore vital that access is maintained at all times. The severance causes a further issue; the Bairds operate a commercial arable business using large machinery that is unsuitable for small fields. RWE proposed cable route will cause small fields to be created and their expectation is that the Bairds will continue to farm those as normal so no compensation is on offer for losses outside of the easement corridor. Whereas these smaller fields will be hopelessly less efficient and most likely unfarmable for the duration of the scheme, the Inspectorate needs to closely		Point 10 of the Relevant representation raises drainage problems and maintenance of access for farming as concerns. The cable route runs south to north through the centre of the Land Interest's fields. The Applicant will discuss in more detail Accommodation Works with the Land. Crossing points can be provided to facilitate access to any severed land. Where severed land cannot be farmed the Applicant would be willing to negotiate an appropriate compensation claim for disturbance. Water environment matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-2 'Environment and disturbance',** with further information provided in the **Table 6-14 'Flooding and Flood Risk'**. An embedded environmental measure (C-28) has been put in place for the delivery of construction drainage plan within the **Outline Code of Construction Practice (CoCP) [PEPD-033]** as secured via Requirement 22 of the **Draft Development Consent Order (DCO) [PEPD-009]**. The measure states that "Particular care will be taken to ensure that the existing land drainage regime is not compromised as a result

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	scrutinise this point. The Bairds have experience of the SW wastewater pipeline scheme that crossed their land in the 1990's. Compensation was based upon a sliding scale of crop losses reducing in loss over the seven year period post scheme works. The reality has proved very different, with crop losses and drainage problems associated with the scheme still impacting crop output to this day. The Bairds therefore have a grave concern that RWE compensation calculators need to take account of the longer term impacts of their scheme. The Bairds are today in receipt of a 20 page Option for grant of easements and a 27 page Deed of grant of easement for a term of years and have one working day to consider these documents to make an informed consultation response. Some months ago they were sent draft heads of terms that were lacking in any of the details now declared in these two documents and were expected to sign those HOTs; they were incentivised by the lure of a bonus payment for a timely signature, yet they could not receive clarification despite repeated requests by their agent. This part of the process has been incredibly unfair sensing it has been engineered to be so; The Planning Inspectorate needs to closely scrutinise RWEs tactics in this regard, it simply cannot be right that the Bairds should be expected to sign documents not having had sight of the full details of contracts. A vain attempt at responding to the two documents received today is made here without prejudice and rights are reserved to make further representations pending advice from professional advisors who will have had the opportunity to properly consider them. The Baird's agent has provided further commentary on the template Option and Easement agreements which seek to impose very unfair and unreasonable terms on the landowner. For example: • A farmer will not be able to undertake routine works, such as improving farm tracks or laying drainage pipes without first seeking consent from RWE. Furthermore, RWE have not stipulated the information they require in order to consider those requests, whether costs are payable, any obligation to reply in a specific timescale, or confirm whether any costs are payable as part of this consenting process. The ongoing disruption to the farming business will be significant, as often work must be carried out quickly in response to flooding or similar events, or can only be undertaken when the conditions are right. We argue that the need for consent should only relate to matters that actually pose a genuine and plausible risk to the cable, seeking consent should not incur any costs for the landowner, the Easement should accurately state the information required for RWE to make a decision, and works should be allowable if RWE does not make a decision within a given timescale. • It seeks to make a landowner liable for costs dealing with any natural or manmade contamination that the applicant might find in the land, whereas on Rampion 1, the cable was laid through registered landfill sites and known areas of natural contamination without imposing any mitigating costs on the landowner. • Previous (verbal) conversations with RWE and their agents confirmed that residential and industrial development would be possible on the easement strip,		of construction. A specialist drainage contractor / consultant will be engaged prior to construction to develop the pre and post-construction drainage plan on agricultural land. Land drainage systems will be maintained during construction and reinstated on completion. Temporary cut-off drains will be installed parallel to the trench- line, before the start of construction, to intercept soil and groundwater before it reaches the trench. These field drains will discharge to local drainage ditches through silt traps, as appropriate, to minimise sediment release." Relevant Representation raises a concern about the the responsibility for contaminated land. The draft voluntary agreements contain the appropriate provisions which govern liability in relation to contaminated land. The voluntary agreements have been issued to the Land Interest and the Applicant will progress discussions with the Land Interest. **3. Restrictions on use of the Easement** The Land Interest raises complaints with regard to the restriction in the voluntary agreement on built development such as roads. The cable restrictive covenant is required to protect the cable infrastructure. This prevents intrusive activities which could damage the underground infrastructure (e.g. building, excavation, intrusive trees). However, the restriction is not absolute as explained in further detail in paragraphs 6.8.14, 6.9.40-6.9.46 of the Statement of Reasons, where standard agricultural practices are permitted to a depth of 0.9m. Normal agricultural operations are therefore likely to be permitted and any requests by the Land interest for permission to install drains or pipes, build ditches or field shelters over the Easement Strip, will not be unreasonably withheld or delayed. The Applicant will necessarily require further detailed information to be able to understand the potential risks to the cables before making an informed decision on particular requests.

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	provided that the easement strip is not to be occupied by buildings, but instead roads, footpaths, verges, gardens etc could be positioned on the strip. The easement documentation now prevents this. It is effectively impossible to develop any part of this land because clauses prevent the surface from being levelled or for drainage ditches, SUDS etc from being installed. The applicant should identify all potential land and lay the cable at a greater depth (or undertake other measures) so that the development of a field is compatible with the easement strip. i.e the surface may be levelled, and new drainage ditches can be dug across the easement strip. • The applicant acknowledges it will need to comply with BNG requirements, but it's solution is to plant trees anywhere on the landowners estate. The ES states that RWE will look after the trees, however, the template easement agreements merely state that RWE can plant anywhere with no rights for continued management. BNG is a 30-year commitment and is it unclear which party will have the liability to comply with this. Landowners have not been offered the ability to claim compensation for land that may be taken for BNG. We argue that RWE should not be allowed to satisfy it's BNG requirements by simply claiming 'rights' to plant trees outside of the easement strip. RWE should conduct itself in a proper and commercial manner without abusing it's CPO powers. By comparison, Highways England seek to purchase land that is required for BNG and therefore a landowner losing land to BNG is compensated in the same manner and quantum to say a landowner losing land to an actual road. Just this week the Bairds agent has been invited to have a detailed conversation with Carter Jonas following receipt of the template Option and Easement Agreement. On behalf of the Bairds and other clients the agent has replied with the following generic comments and concerns; • The agreements are very restrictive. A farmer will never be able to improve a farm track, lay a water pipe, or install a land drain within the easement strip without first seeking RWE's permission. Furthermore, when seeking permission from RWE, it's not known whether they will demand documents and surveys from, charge a fee, or ask to cover their expense? • The wording suggests RWE will only compensate landowners for wrongful acts and where RWE break up the land. This must be amended because causing crop loss is not 'wrongful' and areas will be damaged that are not 'broken' or 'opened up' (eg accesses and compounds) • This cable should be so professionally laid, that RWE don't need to be consulted on new water pipes and drains crossing the easement. • In circumstances where permission is needed, this should be a nil cost and without delay, otherwise the landowner should be allowed to continue with the works regardless. • They must allow levelling and the development of roads, pavements, ditches, verges, gardens, garages, garden fences etc to take place The Bairds remain		The detail of any such request (i.e., construction of roads, footpaths, verges, gardens etc) would be required prior written approval from the Applicant to determine that said activity would not damage the cables, such consent not to be unreasonably withheld or delayed. The Applicant is willing to discuss potential parameters for consents such as appropriate response timeframes and will seek to engage with the Land Interest in the course of discussions on the voluntary agreements. The Applicant has committed to delivering BNG as a result of the Proposed Development. **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** describes the methods and results of the BNG calculations and the approach to delivering newly created and enhanced habitats to meet the target. Any BNG works on the land will be agreed with the Land Interest and the relevant commercial arrangements agreed as appropriate. There are no provisions for BNG commercial arrangements in the voluntary agreement as it is expected by the Applicant that these will be negotiated separately (but potentially alongside the voluntary agreement). As noted above, the Applicant welcomes further discussions on BNG opportunities with the Land Interest and a meeting has been arranged. The Applicant has confirmed to the agent that crop damage as a result of the works will be subject to compensation. Indemnities are also provided by the Applicant in the voluntary agreements to cover wrongful and negligent acts.

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	willing to enter into fair and open negotiations with RWE. For the reasons stated above, the Bairds OBJECT in the strongest possible terms to the current proposals brought forward for consultation.		

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Table LI93 Applicant's Response to Savills (Savills) on behalf of The Personal Executors of Lady Sarah Margaret Clutton (The Personal Executors of Lady Sarah Margaret Clutton) [RR-391]

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LI93.1	Dear Sirs RE: The Duke of Norfolk, Angmering Park Farms LLP, Trustees of The Bernard 16th Duke of Norfolk's 1958 Settlement Reserve Fund, Trustees of The Angmering Park Estate Trust, The Personal Executors of Lady Sarah Margaret Clutton Rampion 2 Offshore Windfarm – Development Consent Order I write in regard to the application for a development consent order and compulsory purchase order relating to the Rampion 2 Offshore Wind Farm which was submitted by Rampion Extension Development Limited on 10 August 2023. Savills are instructed by the Duke of Norfolk, beneficial owner of the Arundel Estate and the Trustees of various Trusts as set out above. Unfortunately, and despite our best efforts, we seem to be at an impasse with Carter Jonas (CJ) who are the agents acting on behalf of the Rampion 2 project. Indeed, we would suggest that no real progress nor meaningful negotiation has now been made for several months. The main issues with how this project is being dealt with (amongst many others) are that: My clients are not being offered reasonable compensation terms and when we have tried to negotiate fair terms (as would normally happen in such matters) we have been met with blanket resistance, it seems to us that CJ have no intention of altering or improving their initial offer. For example, we have tried to negotiate land values with CJ and they have thus far refused to move on this and have disregarded any valid comparisons to recent, similar large infrastructure projects such as Rampion 1, and the Esso pipeline project. My client's concerns are not being listened to and taken on board and the lines of communication of The Rampion project team and their consultants are confusing and misleading. For example, alternative routes have been proposed, but have not been properly evaluated by RWE and their agents and where they have been adopted there are still significant information gaps around the development giving rise to concern about various estate enterprises and businesses. Emails and requests for information have remained unanswered, such as the locations of permanent manhole access points and associated access rights required through extended private routes through the estate which will cover some significant distance from the nearest public highway. Some areas of the route corridor through the estate are extensive, far wider than the standard construction corridor, which could threaten the nationally significant conservation project know as the 'The Peppering Project', further detailed discussion may mitigate these concerns but thus far this has not occurred. Insufficient information has been provided to us / our clients for them to be able to make an informed decision as to whether or not to sign the Key Terms that have been issued by CJ and when we have asked for more information or greater explanation, none has been forthcoming. For example, myself and the other agents acting for landowners along the route requested copies of the draft legal agreements so we could fully advise our clients. These have only recently been provided to some clients and demonstrate that the Key Terms document produced by CJ was insufficient, lacked detail and could not be signed and would have resulted in protracted or abortive negotiations with solicitors. The Rampion 2 project team are not willing to cover the cost of landowners' proper and reasonable professional fees, this has been apparent at the consultation stage and remains a concern as we enter negotiation of	077	**Context** The Land Interest owns arable land which is affected by the proposed cable route (Plots 7/12 & 7/23), works no. 09. The Land Interest also owns arable land which is affected by the proposed temporary construction access (Plots 7/11, 7/14, 7/20 & 7/22), works no. 13. Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 7 of the **Onshore Works Plans [PEPD-005]**. **Voluntary Agreement** The Applicant issued Heads of Terms to the Land Interest in July 2023. The Applicant chased the Land Interest's agent in August 2023 for a response / acknowledgement of receipt of the Heads of Terms. The Applicant issued the draft Option Agreement and draft Deed of Grant for an Easement to the Land Interest's agent in October 2023 (and had not having received any response during this time). The Applicant met with the Land Interest and the Land Interest's agent in October 2023 to seek to instigate the negotiations of the Heads of Terms. The Applicant has not received a counter-offer or alternative land values in relation to compensation terms from the Land Interest's agent the Applicant would be willing to enter into discussions about this in the first instance. During the meeting in October 2023 the Applicant outlined an area in the Estate whereby the DCO boundary was wider than the standard construction corridor width of 40m and explained that until ground investigation works have been undertaken the Applicant will not know where the final cable route design will go and has allowed a larger area to incorporate flexibility within the final cable route design. The Applicant had an on-line video call with the Land Interest's agent in December 2023 whereby the associated access rights required through the estate were discussed and reviewed. The Applicant had submitted all the follow-up information to the Land Interest and the Land Interest's agent as requested in the October 2023 meeting at the start of December 2023. None of the proposed access routes (construction or operational) through the estate will have any impact on the existing large scale and long running agri-environmental scheme. The Applicant is still waiting for a detailed response from the Land Interest's agent in relation to comments on the draft Option Agreement and draft Deed of Grant for an Easement as well as any further information in relation to counter-offers and or alternative land values.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	the Key Terms. There seems to be a disjointed approach to how landowners and agents are being informed of matters and a consistent lack of detail. Whilst my clients and I will continue to engage with RWE and CJ in order to try and achieve the best outcomes for the affected land, we felt we must make a representation to you so that you aware of the poor engagement and lack of detailed meaningful consultation that has thus far taken place between the Rampion 2 project and our client.		At the meeting in October 2023, the Applicant confirmed that reasonably incurred professional fees will be reimbursed, on the provision of an accompanying timesheet to any fee account.

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Table LI94 Applicant's Response to Lester Aldridge LLP (Lester Aldridge LLP) on behalf of Thomas Ralph Dickson (Thomas Ralph Dickson) [RR-396]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI94.1	Rights Sought 1. Thomas Ralph Dickson ("Dickson") is represented by Lester Aldridge LLP. Mr Dickson is the freehold owner of the land known as [REDACTED] ("Land") and is an Interested Party for the purposes of the DCO. The relevant order plots are 24/17, 25/2, 25/3, 25/4, 25/5 as listed in Category 1 of the Book of Reference ("Order Plots"). 2. Mr Dickson objects the acquisition of rights and the imposition of restrictive covenants over his Land. 3. The acquisition of the rights and imposition of restrictive covenants via deploying open cut route cross-farm Order Plots. 4. A summary of the principal issues are below. Mr Dickson reserves the right to expand and add to these points as the examination unfolds and in result of any response from the Applicant. Equality Act 2010 ("EA")	078	**Context** The Land Interest owns pasture land which is affected by the proposed cable route (Plots 24/17 & 25/2), works no. 09, for which a package of Cable Rights and a Cable Restrictive Covenant are required. The Land Interest also owns concrete farm track / drive which is affected by the proposed operational access (Plots 25/3, 25/4 & 25/5), works no. 15. Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet's 24 & 25 of the **Onshore Works Plans** **[PEPD-005]**. The Applicant notes that the land that is proposed to be used for the onshore cable route is currently used for grazing cattle. The construction works will result in restricted access to the fields to the north of the cable route, however the Applicant has offered to provide appropriate crossing points at locations to be agreed with the Land Interest and to fund a stockperson to help with the management of the cattle.
LI94.2	5. The Applicant has disregarded Mr Dickson's protection under the Equality Act 2010 due to his age. For example, in a letter to Mr Dickson dated 24 May 2023, the Applicant erroneously conflates age and disability, showcasing a total lack of understanding of equality legislation and a woeful neglect in adequately addressing his distinctive circumstances.		**Equalities Act 2010** The public sector equality duty is set out in section 149 of the Equality Act 2010. The duty requires public authorities to have due regard in the exercise of their functions to the need to: *(a) eliminate discrimination, harassment, victimisation and any other conduct that is prohibited by or under the EA 2010;* *(b) advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it;* *(c) foster good relations between persons who share a relevant protected characteristic and persons who do not share it.* The Secretary of State for Energy Security and Net Zero who will determine the application for the Order is a public authority for these purposes but the Applicant is not. Age and disability are "relevant protected characteristics". The public sector equality duty is a general duty. In the context of the DCO application process, it requires the Secretary of State (as the public decision-making authority) to consider whether deciding to grant a DCO application/make a DCO would be likely to have a differential impact on any person(s) with a relevant protected characteristic. In doing so the Secretary of State should consider whether any action could be taken to lessen/mitigate any such impact; and whether the public benefits of the DCO outweigh the impact. It is important to note that the requirement is for the duty to have been considered as part of the decision-making process. The identification of differential impacts on a person(s) with a relevant protected characteristic(s) would not preclude the Secretary of State from deciding to make a DCO.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			Whilst the public sector equality duty rests with the decision-maker, in preparing the application for the Order, the Applicant has had regard to the public sector equality duty, and has carried out an Equalities Act Impact Assessment (Equality Statement, Appendix 28.3, Volume 4 to Environmental Statement) (Document Reference: 6.2.4). The assessment concludes that no adverse equality effects are expected as a result of the construction, operation and maintenance, or decommissioning phases of the project. The Applicant does not therefore consider that the proposed development will give rise to any impacts or differential impacts on persons who share a relevant protected characteristic as defined in the Equality Act, or upon persons who do not share such relevant protected characteristic. In any event, with regards to the Land Interest, he has not, despite several requests from the Applicant to do so, explained what relevant protected characteristic(s) he purports to have, nor how he considers they will be impacted by the proposed development and/or the decision as to whether to make the Order. The Relevant Representation submitted on behalf of the Land Interest suggests that his relevant protected characteristic is age. The Relevant Representation also makes reference to a letter to the Land Interest from the Applicant dated 24 May 2023, which it is suggested "erroneously conflates age and disability, showcasing a total lack of understanding of equality legislation". A copy of that letter "Mr Dickson 24-5-23" can be found at **Appendix 24 Letter to Mr Dickson 24.05.23**. That is not the case. The 24 May 2023 letter refers to a previous letter from the Land Interest in which he stated that he did not feel that the Applicant had given consideration to his "circumstances and disabilities". The 24 May letter also refers to verbal correspondence (discussions between the Applicant's appointed land agents and the Land Interest) in which the Land Interest had identified age as a factor in the way in which he farms his cattle. The Applicant was not conflating age and disability but trying to understand the Land Interest's particular circumstances and concerns, including any relevant protected characteristic(s) he considers he has and how they are impacted, with a view to trying to agree suitable mitigation measures. The Applicant would also note that the requirement to make "reasonable adjustments" is a requirement relating specifically to disability, not age. The Applicant has not misunderstood the requirements of the Equality Act 2010 or the public sector equality duty, nor erroneously conflated age and disability as suggested in the Relevant Representation. The Applicant has previously sought to understand through site visits with the Land Interest and the Land Interest's agent on 8th April 2022, 15th June 2022 & 15th March 2023 and as noted in letters dated 19th, August 2022, 14th April 2023, 24th May 2023 & 11th January 2024 attached at **Appendix 24 Letter to Mr Dickson 24.05.23, Appendix 25 Letter to G Streeter 19.08.22, Appendix 26 Letter to Mr Dickson 14.05.23** and **Appendix 27 Letter to Mr Dickson 11.01.23**, the Land Interest's particular circumstances and concerns, including any relevant protected characteristic(s) he considers he has and

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			how they are impacted, with a view to trying to agree suitable mitigation measures. The Applicant remains willing to do so.
LI94.3	6. The cable routes will inevitably cause unnecessary operational difficulties for Mr Dickson in respect of the farm that could be avoided. This point will be significantly expanded as the inquiry unfolds.		**Accommodation Works** Relevant representation response no. 6 states that the cable route will cause operational difficulties for the Land Interest. The Applicant's consideration of Alternatives are set out below in response to point 8. The Applicant has met with the Land Interest on 8th April 2022, 15th June 2022 and 15th March2023 and has attempted to explain the cable route design and how Accommodation Works will enable the Land Interest to be able to gain access to all areas of his land during the construction period. In the Applicant's letter dated 11th January 2024 the Applicant reconfirmed a proposal of funding a stockperson to assist with the Land Interest's day-to-day farming (moving of livestock) during the construction period. The letter states "*Rampion 2 would be prepared to discuss the farm's requirements for availability of a stockperson and has already offered to discuss commitment to funding. However, our land agent Carter Jonas needs to understand the current farm management arrangements and to discuss potential mitigation solutions before commitments can be fully closed out. I understood that Nigel Abbott tried to arrange a meeting w/c 21st August with your then newly appointed agent Chris Tipping of Batcheller Monkhouse but you were away. We look forward to receiving potential meeting dates to progress these discussions*." No response has been provided further to the letter being sent and potential meeting dates have been provided by the Land Interest.
LI94.4	Failure to Consider Alternatives 7. The Applicant's Statement of Reasons ("SoR") alleges that as result of their consultation process, cable route amendment and construction related change requests have been subject to review by the Applicant's team during the evolution of the scheme design and accommodated where justified (see SoR at 6.2.3).		**Alternatives** The Applicant notes that the relevant representation point 7 states that there has been a failure by the Applicant to consider Alternatives. Route alternatives and sifting matters for the entire Proposed Project have been responded to by the Applicant in **Table 6-4 'Route / Alternatives'**. The following Alternatives have been proposed by the Land Interest and considered by the Applicant: • Trenchless crossing of the entire landholding • Movement of the cable route to the north to follow the existing field boundary. The Applicant's rationale for the decisions made is set out below in detail in response to point 8.
LI94.5	8. Prior to a decision being made the Applicant ignored and failed to engage in meaningful and collaborative consultation in respect of the alternative routes and methodology through the Land: a. The installation of the cable via hybrid methodology part HDD part open-cut. b. Relocation of the open trench cable to the northern point of the field boundary of the Land (together the "Alternatives")		Relevant representation point 8 states that the Applicant failed to engage in meaningful and collaborative consultation in respect of the alternative routes and methodology through the Land for a. The installation of the cable via trenchless crossing methodology the relocation of the open trench cable to the northern point of the field boundary of the Land.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			3. Use of trenchless crossing through the Land Interest's land. During the meetings with the Land Interest, on 8th April 2022, 15th June 2022 and 15th March 2023, the Land Interest explained that the Land Interest's proposed trenchless crossing construction methodology had been considered as part of a Design Change Review. The Applicant set out the rationale behind the result of the Design Change Review in a letter to the Land Interest dated 19th August 2022 which is attached at **Appendix 25 - Letter to G Streeter 19.08.22**. The letter states that "*Once complete, our cable route will form part of the national electricity transmission network. Policy and legislation reflects that electricity networks are developed in an "economic and efficient" manner. In this case, as in general for underground electricity cable routes, the crossing of current open pasture land at College Wood Farm would not justify the additional cost of a trenchless installation, given the temporary nature and limited effects (as assessed through our Environmental Impact Assessment process) of our open cut construction and subsequent reinstatement works. This includes consideration of the ecological status of the land*." 4. Movement of the Cable to the North The Applicant communicated, and explained the rationale behind the decision making, to the Land Interest including the reasons why the Land Interest's change requests could not be accommodated through it's letter dated 14th April 2023 (**Appendix 26 Letter to Mr Dickson 14.05.23**) and telephone conversation on 22nd May 2023. No further relevant information was put forward by the Land Interest to the Applicant to consider in relation to the final cable routeing on the Land Interest's land that had not already been taken into consideration. The Applicant's rationale had been reiterated to the Land Interest in the letter dated 14th April 2023. The following extract from the letter dated 14th April 2023 provides the reasoning why the cable route cannot be moved to the northern alignment proposed by the Land Interest: *"The width of our current, proposed red line DCO boundary provides us with some flexibility to avoid some wet areas of ground. However, were we to move the construction corridor further north of the current proposed red line DCO boundary (towards the field boundaries) then we would encounter other issues:* • *We would cross additional treelines.* • *We would need to protect the root protection zones of trees, meaning that the works would need to be kept a minimum of 10m-15m away from the (non ancient) woodland areas on the property boundary.* • *Where the property boundaries comprise ancient woodland, a buffer of 25m is required to be met and it is noted that much of the woodland to the north is designated ancient woodland and would be subject to associated protective*

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			planning policies. These areas are marked on the enclosed plan 42285- WOOD-CO-ON-PN-MD-0022 • *The project is required to use a cable routeing that is economic and efficient. Therefore, the additional cable length required by the routeing of the cable northward along the field boundary would need to be justified on environmental or engineering grounds (which the Rampion2 team do not believe it to be).* *Notwithstanding the above constraints, we have sought to address the points you have raised and considered the possibility of moving the cable route northwards but remaining within the red line DCO boundary. The attached plan reference 42285-WOOD-CO-ON-PN-MD-0022 shows:* *- Red line DCO boundary (as published for consultation in Oct/ November 2022) -* *- potential indicative 40m cable routeing hatched in green avoiding tree belt* *- ancient woodland areas (minimum distance 39m from DCO red line at the closest point)* *This has been prepared to show how we may be able to locate the final cable alignment within the red line DCO boundary so as to push it as far north as practicable.* *We cannot fix the precise cable alignment at this stage, and we propose to progress the full extent of the DCO red line in order that maximum flexibility to install the cable is maintained as discussed on the phone. We will seek to deliver the approximate alignment shown hatched green on the plan if reasonably feasible and practical prior to construction. Please do contact me if you would like to discuss this further."*
LI94.6	9. The Alternatives would have significantly reduced the impact on Mr Dickson's livelihood thereby negating the need to provide crossing points. The impact of the Applicant's proposals are a breach of the EA due to Mr Dickon's personal circumstances. 10. Sample evidence includes: a. Omission to include Mr Dickson's land in Targeted Onshore Cable Route Consultation from 18th October 2022 to 29th November 2022. b. The final decision for the chosen cable corridor affecting Land was not communicated prior to the DCO Application being submitted. c. In a letter dated 14th April 2023, the Applicant confirmed a 25 metre stand off from ancient woodland, following consultation with WSCC and NE. Instead, the Order Limits is approximately 70 meters.		Please refer to the Applicant's response to reference **LI94.4** regarding point 9. With regard to point 10.a of the relevant representation response, the Land Interest criticises the Applicant for not including the Land Interest's proposed alternative in the second statutory consultation. For the reasons set out in response to point 8, in particular the location of the northern alignment proposed being within the ancient woodland buffer, the Applicant did not consider the proposed alternatives appropriate for inclusion in the second statutory consultation. Point. Point 10.b of the relevant representation states that the Applicant did not communicate the final cable route. This is incorrect as the final route was communicated via the letter of 14th April 2023. Point 10.c of the relevant representation notes that the cable route is 70m from the ancient woodland. The Applicant refers to the letter of 14th April 2023 which sets out all the reasons for the decision to not move the cable further north. The Applicant further notes: - There was no request from the Land Interest to move the cable route to the edge of the ancient woodland buffer - movement of the cable route 45m to the north would still leave land to the north of the cable route inaccessible without crossing points.

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LI94.7	11. Other than an unsubstantiated funding explanation (a summary of which has been requested and not provided), there has not been a substantive reason as to why the alternatives cannot be accommodated. Mr Dickson (via his agents) is open to meaningful negotiation with the Applicant and awaits engagement to agree an acceptable route.		The Applicant has written to the Land Interest, in letters dated 19 August 2022, 14 April 2023, 24th May 2023, and 11th January 2024, providing detailed reasoning and rationale behind the cable route design and why the Land Interest's proposed alternative routes cannot be accommodated.
LI94.8	Failure to Negotiate the CPO 12. Compulsory purchase is a measure of last resort, and the Applicant has not seriously considered alternative means of bringing about the objective of the CPO in respect of the Land: a. The Applicant's SoR acknowledges ongoing discussions with landowners, but no heads of terms for a voluntary agreement have been issued to Mr Dickson, despite documented requests from agents and assurances from the Applicant. b. The Applicant was only in negotiation with 25 out of 173 landowners (14%) and has agreed on terms with only 3 landowners (1.7%). c. No attempts were made to meaningfully and collaboratively negotiate with Mr Dickson before making the Draft Order despite Mr Dickon's strenuous attempts over a long period of time as evidenced in very extensive written correspondence, phone calls and emails.		**Voluntary Agreement** The Applicant notes at point 12 that the Land Interest's representative states that no heads of terms for a voluntary agreement have been issued to the Land Interest. The Applicant was informed verbally by the Land Interest on 22nd May 2023 specifically not to issue Heads of Terms. There is no documented evidence of requested Heads of Terms from the Land Interest further to the call on 22nd May 2023. Substantive attempts to negotiate with the Land Interest have been made by the Applicant. The most recent letter to the Land Interest dated 11th January 2024 attempts to further discussions on measures to facilitate solutions for the difficulties the Land Interest has outlined. The Applicant notes at point 12 that the Land Interest is 'open to meaningful negotiation with the Applicant. In light of the comments in the relevant representation, the Applicant has therefore issued heads of terms for a voluntary agreement were issued on 26th January 2024 and awaits engagement to progress matters'.
LI94.9	13. Relocation of the open trench cable to the northern point of the field boundary is feasible to deliver the objective of the CPO. Failure to Offer Dispute Resolution		Relevant representation point 13 refers to the feasibility of moving the cable route to the northern point, however as noted above the movement of the cable route to the location proposed by the Land Interest would infringe on the ancient woodland buffer proposed to be utilised for the Proposed Development. The Applicant has explained to the Land Interest in the letter dated 14 April 2023 the reasoning in full, why the request could not be accommodated.
LI94.10	14. The Applicant has not offered Mr Dickson access to ADR throughout the CPO process, contrary to the Government's CPO Guidance. Failure to Adequately Consider Environmental Engineering and Ecology Factors		Point 14 of the Relevant epresentation states that the Applicant has not offered the Land Interest ADR. As noted above negotiations with the Land Interest on voluntary agreements had not been progressed in 2023 due to the Land Interest communicating a request not to issue Heads of Terms. The Applicant welcomes the comments that the Land Interest now wants to engage and the Applicant has now issued Heads of Terms. The Applicant's land agent also made the following offer in the letter of 26th January 2024 enclosing the Heads of Terms "*Once you have been able to review the Heads of Terms I would be happy to discuss what forms of Alternative Dispute Resolution (ADR) may be appropriate in order to seek to resolve any outstanding concerns that may relate to agreeing the amount of compensation payable, the proposed works and acquisition, as well as mitigation measures and accommodation works which may be adopted of undertaken*."

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LI94.11	15. The Order would cause serious environmental issues in respect of the Land, which the Applicant has not considered, example: a. The proposed scheme poses risks to biodiversity, including vulnerable species like the turtle dove. b. Damage to a breeding pond for great crested newts. c. Foraging opportunities for invertebrates would be significantly reduced. d. Reptile species face direct risks of injury and loss of habitat. e. Disruption with connectivity with higher quality habitats, affecting terrestrial animals and bats. f. Priority habitats like deciduous woodland, waterbodies, and hedgerows are at threat and require conservation action.		The Applicant notes the issues raised in this relevant representation. Terrestrial ecology and nature conservation matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-2 'Environment and disturbance'** with further information provided in the **Table 6-3 'Ecology'**. The **Outline Code of Construction Practice** [**PEPD-033**] provides for avoidance and mitigation measures for breeding birds including red listed species such as turtle dove (see in particular commitments C-21, C-203 and C-215). No ponds (regardless of occupation by great crested newts will be lost to development) see the **Outline Code of Construction Practice [PEPD-033]** and works will be covered by the West Sussex district level licence for great crested newts administered by Nature Space as noted in **Chapter 22 of the ES Terrestrial Ecology and Nature Conservation [APP-063]**. Loss of habitat for foraging invertebrates will be temporary and in any location small (noting that although the cable route is long, habitat loss in a given area is relatively small compared to the size of the majority of fields crossed). The Proposed Development will see more habitats managed for biodiversity in the area than at present through the delivery of Biodiversity Net Gain (see **Appendix 22.15 of the ES Biodiversity Net Gain Information [APP-193]**) thereby likely providing better foraging habitat for invertebrates in the medium and long term. The presence of reptiles is commonly managed on construction sites through tried and tested methods including translocations and destructive searches. These are allowed for through the **Outline Code of Construction Practice [PEPD-033]** and in particular commitments C-207 and C-208. Habitat loss and fragmentation have been assessed within **Chapter 22 of the ES Terrestrial Ecology and Nature Conservation [APP-063]**.
LI94.12	Lack of Funding 16. The Applicant lacks funds and cannot guarantee funding from its shareholders for the project as it is a SPV, which does not have assets of its own. There is a risk the Applicant cannot fund the project and would be unable to offer compensation to affected parties. Failure to Conduct with the Conformity of Natural Justice 17. The Applicant has repeatedly made verifiable inaccuracies to the determinant of Mr Dickson.		**Funding** The Applicant has demonstrated in its **Funding Statement [APP-025]** how the delivery of the Proposed Development will be funded and how compensation liability for the compulsory acquisition of land and rights will be met. The Funding Statement explains that Rampion 2 Extension Development Limited is a joint venture between RWE Renewables UK Limited, Enbridge Rampion UK II Limited, and a Macquarie-led consortium. The company vehicle for progressing the Rampion 2 project is a special purpose vehicle (SPV). The use of SPV's for infrastructure project delivery is common. The SPV parent companies are companies with proven funding and technical delivery of large-scale renewable energy project including offshore wind farms. This is set out in the **Funding Statement [APP025]** which states that Applicant's ultimate parent companies and investors have significant assets and financial resources available to them" a summary of which is set out in the **Funding Statement [APP-025]**. Accordingly, were the

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			Secretary of State to grant the compulsory acquisition powers sought in the order, the Proposed Development is likely to be undertaken and not prevented due to difficulties in sourcing and securing the necessary funding,

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Table LI95 Applicant's Response to Tiffinny Myatt-Wells [RR-397]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI95.1	We have 7 goats on our land that you are coming across, we have ancient meadow grass and hedgerows with berries which they graze and what you are proposing to replace it with will take 10 + years to grow for them to be able to feed on again. We will be losing the hay from our field which is superb and sweet and it will not be at all good unless you can replace it with something like for like afterwards. We will be losing half the field for up to 3 years as well and I have not been assured on any precise details on how we are meant to cope or what will be reinstated after the works.	079	**Context** Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet 30 of the **Onshore Works Plans [PEPD-005]**. The Land Interest has pasture land (currently used for grazing) affected by the proposed cable route (Works No 9 – Cable Installation works (including construction and operational access)), for which a package of Cable Rights and a Cable Restrictive Covenant are sought. The land affected forms part of a larger field, and it will be possible for the Land Interest to graze the remainder of the field following fencing of the working area for construction. An operational access (Works No.15) was removed from design and therefore no longer affects this land holding. **Compensation** If Compulsory Purchase Powers are used, affected Land Interests will be compensated in accordance with the provisions of the Compensation Code. Claims for disturbance and crop loss will be considered where reasonable, substantiated and shown to be caused as a direct consequence of the temporary use of the land and the works in accordance with the relevant legislation. Once the cable has been constructed and the land reinstated, the land can be returned to normal use. Please see further information described in paragraph 4.5.51 of the **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**. The **Outline Code of Construction Practice (CoCP) [PEPD-033], Outline Landscape and Ecology Management Plan (LEMP) [APP-232]** and **Outline Soils Management Plan (SMP) [APP-226]** describe the measures to reinstate all temporary working areas to their prior condition. The Applicant is committed in the **Outline SMP [APP-226]** to returning agricultural land to its original Agricultural Land Classification grade and soil resources present and all areas potentially subject to ground disturbance during construction of Rampion 2 will be surveyed pre-construction to confirm the baseline ALC grade and inform the stage specific SMP(s). The Applicant is willing to discuss appropriate accommodation works and compensation with the Land Interest and their agent.

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Table LI96 Applicant's Response to Henry Adams LLP (Henry Adams LLP) on behalf of Timothy Longhurst (Timothy Longhurst) [RR-400]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI96.1	I make these comments on behalf of Tim Longhurst who is a directly affected claimant on the route of the cable. The primary concern is that the claimant has an excellent field suitable for development that immediately adjoins Lyminster, however, the proposed cable route will sterlise both the easement strip, and the rest of the field it passes through. We should highlight that proposals to develop this field have been discussed for many years, however, action has been delayed pending the completion of the Lyminster bypass. The bypass is now under construction, which will mean that traffic from the proposed development site will be able to exit onto what is currently a busy and congested road, that suffers from standing traffic arising from the railway crossing. Lyminster is constrained by a flood zone and has very limited areas for construction. The cable will go through the best and most obvious place for residential development. These concerns were raised with RWE at a very early stage in the process, and we recommended that the cable be located on towards the edge of the field in order to minimise its impact. Instead, RWE are proposing to come through the middle of the field which will cause maximum damage to the development prospects. We object to the scheme on the basis that: - RWE have not fully considered the impact of the Lyminster bypass. Ls It did not appear on the route maps and therefore the public were not able to make proper and informed judgements about the cable route. - We have sought a narrower easement strip. We are aware of narrower easements being permissible on the Rampion 1 scheme, even at difficult locations (e.g the field immediately south of the A27 on Rampion 1) on the basis that the field had hope for development. We argue that a similar approach should be taken here. - RWE have not considered the social and economic impacts of sterlising the best development land in Lyminster. Local people will be denied an opportunity for much needed affordable homes. It will also be denied the associated infrastructure and community investments that are often part of any new build scheme. - The proposed easement terms render the development of the land impossible. RWE have not made any attempt to permit the construction of roads, verges, gardens, etc anywhere on the easement strip. We argue that such matters should be allowable and that the cable depth and construction should be specified in a way that reflects the genuine development opportunities and therefore allows the construction of such assets without consequence, delay or concern. - RWE have not attempted to negotiate in a proper manner. There has been reluctance and delay to issuing the easement and option agreements. They have not properly considered minor route adjustments (such as moving the cable to the side of the field) and the planning inspectorate will note that such amendments do not feature in the submitted documents. The easement terms are unnecessarily restrictive and are too generic – failing to reflect on the individual concerns of the landowner.	080	**Context** The Land Interest owns arable land which is affected by the proposed cable route (Plots 4/6, 4/24, 5/1, & 5/6), works no. 09. The Land Interest also owns arable land which is affected by proposed temporary storage of excavated materials (Plot 4/8), works no. 11. In addition, parts of the Land Interest's land holding are affected by operational access (Plots 4/7, 4/9, 5/2, & 5/5), works no. 15. Details of the onshore cable route as it passes through the Land Interest's land holding are shown on Sheet's 4 & 5 of the **Onshore Works Plans [PEPD-005]**. **Engagement** A site meeting was held on 5th April 2022 to walk the route and discuss issues arising and key terms were issued on 13 April 2023. Comments from the Land Interest's agents were received on the proposed key terms and responded to in April 2023. A copy of the easement and Option were issued in September 2023 and comments received in October 2023. A meeting was arranged for November 2023 when issues were discussed. **Proposed Use of the Land** The Applicant notes the Land Interest's long term development intentions for the land. The Land Interest's land is not allocated for residential development within the Arun Local Plan 2011-2031. Nor is it a site that benefits from planning permission. It is not part of the local planning authority's Housing & Economic Land Availability Assessment (HELAA) of sites that could potentially come forward for housing undertaken in 2021. The land is partially designated as "Gaps Between Settlements" under Policy SD SP3 and a Biodiversity Opportunity Area (BOA) under Policy ENV DM3 of the Arun District Local Plan 2011- 2031. These are not development allocation policies but environmental and countryside protection policies. The Applicant is therefore of the view that the development potential for this land (if any) is in the longer-term, certainly post construction of the Rampion 2 scheme. There is no evidence to indicate that the policy status of the land will be amended rendering it suitable for development or rationale for the Land Interest's view on development potential, particularly in light of the existing protective policies. Nor in the absence of any option / promotion agreement over the land for its development, do the alleged development prospects have a bearing on the value of the land over which the cable permanent easement is sought. The Applicant notes however that valuation considerations are not matters for the examination of the draft DCO. **Route Alternatives**

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
			The Applicant notes the issues raised in this relevant representation. Route alternatives and sifting matters raised within this Relevant Representation have been responded to by the Applicant in **Table 6-4 'Route / Alternatives'**. **Socio Economics** The Applicant notes the issues raised in this relevant representation. Socio economic matters raised within this Relevant Representation have been covered in **Table 6-2 'Environment and disturbance',** with further information provided in **Table 6-17 'Impacts on businesses and the local economy'**.

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Table LI97 Applicant's Response to Trustees of The 16th Duke of Norfolk's 1958 Reserve Fund. (Trustees of The 16th Duke of Norfolk's 1958 Reserve Fund.) [RR-404]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI97.1	Dear Sirs RE: The Duke of Norfolk, Angmering Park Farms LLP, Trustees of The Bernard 16th Duke of Norfolk's 1958 Settlement Reserve Fund, Trustees of The Angmering Park Estate Trust, The Personal Executors of Lady Sarah Margaret Clutton Rampion 2 Offshore Windfarm – Development Consent Order I write in regard to the application for a development consent order and compulsory purchase order relating to the Rampion 2 Offshore Wind Farm which was submitted by Rampion Extension Development Limited on 10 August 2023. Savills are instructed by the Duke of Norfolk, beneficial owner of the Arundel Estate and the Trustees of various Trusts as set out above. Unfortunately, and despite our best efforts, we seem to be at an impasse with Carter Jonas (CJ) who are the agents acting on behalf of the Rampion 2 project. Indeed, we would suggest that no real progress nor meaningful negotiation has now been made for several months. The main issues with how this project is being dealt with (amongst many others) are that: My clients are not being offered reasonable compensation terms and when we have tried to negotiate fair terms (as would normally happen in such matters) we have been met with blanket resistance, it seems to us that CJ have no intention of altering or improving their initial offer. For example, we have tried to negotiate land values with CJ and they have thus far refused to move on this and have disregarded any valid comparisons to recent, similar large infrastructure projects such as Rampion 1, and the Esso pipeline project. My client's concerns are not being listened to and taken on board and the lines of communication of The Rampion project team and their consultants are confusing and misleading. For example, alternative routes have been proposed, but have not been properly evaluated by RWE and their agents and where they have been adopted there are still significant information gaps around the development giving rise to concern about various estate enterprises and businesses. Emails and requests for information have remained unanswered, such as the locations of permanent manhole access points and associated access rights required through extended private routes through the estate which will cover some significant distance from the nearest public highway. Some areas of the route corridor through the estate are extensive, far wider than the standard construction corridor, which could threaten the nationally significant conservation project know as the 'The Peppering Project', further detailed discussion may mitigate these concerns but thus far this has not occurred. Insufficient information has been provided to us / our clients for them to be able to make an informed decision as to whether or not to sign the Key Terms that have been issued by CJ and when we have asked for more information or greater explanation, none has been forthcoming. For example, myself and the other agents acting for landowners along the route requested copies of the draft legal agreements so we could fully advise our clients. These have only recently been provided to some clients and demonstrate that the Key Terms document produced by CJ was insufficient, lacked detail and could not be signed and would have resulted in protracted or abortive negotiations with solicitors. The Rampion 2 project team are not willing to cover the cost of landowners' proper and reasonable professional fees, this has been apparent at the consultation stage and remains a concern as we enter negotiation of the Key Terms. There seems to be a disjointed approach to how landowners and agents are being informed of matters and a consistent lack of detail. Whilst my clients and I will continue to engage with RWE and CJ in order to try and achieve the best outcomes for the affected land, we felt we must make a representation to you so that you aware of the poor engagement and lack of detailed meaningful consultation that has thus far taken place between the Rampion 2 project and our client.	081	Through ongoing engagement with the Land Interest's agent, it has been established that the Land Interest no longer has an interest in land affected by the proposed Rampion 2 Offshore Wind Farm cable route and was not included in the Application Book of Reference.

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Table LI99 Applicant's Response to Network Rail Infrastructure Limited [RR-266]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI99.1	1. We act for Network Rail Infrastructure Limited (Network Rail) and have been instructed to submit relevant representations on its behalf. As a statutory undertaker affected by the proposed DCO we respectfully request the Examiner exercise its discretion and accept Network Rail as an interested party for the purposes of the Examination process. 2. Network Rail is continuing to review the application material, with the intention that further detail will be provided at the written representation stage.	034	Noted
LI99.2	3. We also note that the draft DCO currently does include protective provisions for the protection of the railway however, it is a version which has not yet been agreed with the Network Rail and therefore Network Rail wish to use their standard protective provisions, (as attached to these representations) on the face of the draft DCO, which will be necessary given the proximate location of the works to the railway. Any amendments to Network Rail's protective provisions can be secured through a Framework Agreement.		The Applicant is currently in discussions with Network Rail to agree suitable protective provisions and anticipates being in a position to include final and agreed protective provisions the DCO shortly, and certainly within the timeframe of the Examination.
LI99.3	4. The draft DCO proposes to permanently acquire rights (cable rights or operational access rights) over four plots of Land where Network Rail is the Owner or has rights over - plots 3/4,3/18,3/23 and 3/24. Network Rail will require their existing rights to be retained, as well any existing rights yet to be determined.		Network Rail will retain ownership of its land and its ability to carry on its undertaking will be unaffected by the proposed acquisition of rights over its land and/or the proposed development. Network Rail's position will be protected by the proposed combination of a land agreement, asset protection agreement and protective provisions.
LI99.4	5. Furthermore, the draft DCO proposes the use of compulsory acquisition powers in relation to operational land of Network Rail (Plots 3/4 and 3/23) and this poses significant issues for the safe operation of the railway. Network Rail will therefore require Rampion 2 Extension Development Limited to enter into an Asset Protection Agreement, as well as potentially several other legal agreements to protect Network Rail's operational land. 6. We reserve our client's position to expand on this representation. Dentons UK and Middle East LLP 31 October 2023		The Applicant has been in regular contact with Network Rail with regards to the required railway crossing agreements and asset protection agreements. Alternative routes were discussed with Network Rail further to the second statutory consultation. The Applicant is pursuing basic Asset Protection and Optimisation teams ("ASPRO") clearances with the Land Interest and protective provisions are under negotiation which include asset protection arrangements. A land agreement is also being taken forward with the Land Interest's Property Department, subject to operational approval of ASPRO.

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Table LI103 NOT IN USE

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Table LI104 Applicant's Response to AQUIND Limited [RR-031]

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI104.1	INTRODUCTION 1.1 AQUIND Limited (AQUIND) are the promoter of AQUIND Interconnector, a proposed bi-directional electricity interconnector with a nominal capacity of 2000MW between Great Britain and France located off the coast of Portsmouth offshore and between Portsmouth and Lovedean substation onshore. 1.2 A development consent order is being sought to authorise the construction and operation of AQUIND Interconnector. A decision on whether to grant development consent for AQUIND Interconnector is awaited from the Secretary of State for Energy Security and Net Zero. 1.3 There is overlap of the Order limits for AQUIND Interconnector by the Rampion 2 Offshore Wind Farm (OWF). The purpose of this Relevant Representation (RR) is to outline the main issues which AQUIND identifies are required to be considered as part of the examination of the OWF in relation to that overlap, of information which has been identified to be required to be produced by Rampion Extension Development Limited (RED) in connection with the examination, and of the measures which are required to ensure that both projects are able to be delivered.	N/A	The Applicant notes the points raised and has provided responses in references **LI104.2 - LI104.7** below.
LI104.2	2. SUMMARY OF MAIN ISSUES 2.1 There is a lack of consideration of AQUIND Interconnector, including as part of the Alternatives (ref: APP-044 6.2.3 Environmental Statement - Volume 2 Chapter 3 Alternatives) and Proposed Development (ref:APP-045 6.2.4 Environmental Statement - Volume 2 Chapter 4 The Proposed Development) Environmental Statement (ES) Chapters. There is no reference to or consideration of the spatial overlap between the two projects. There is no genuine consideration of the proximity agreements and cable crossings required, and RED propose to designate a disposal site which spatially overlaps one of the AQUIND registered disposal sites and which has the potential to give rise to impacts which are not assessed. 2.2 The assessment of AQUIND Interconnector (as a receptor) in the Other Marine Users Chapter (ref: APP-048 6.2.7 Environmental Statement - Volume 2 Chapter 7 Other marine users) does not adequately consider the full range of impacts. Where impacts on AQUIND interconnector are assessed they are often undervalued or do not include consideration of the full extent of impacts to AQUIND. 2.3 The Other Marine Users Chapter also relies on mitigation which is either not adequately defined or developed (e.g. reference to cable crossings and proximity agreements but without required engagement or consideration), or that may result in impacts to AQUIND Interconnector itself (e.g. reliance on Safety Zones will restrict access to AQUIND Interconnector during construction and operation).		The AQUIND Interconnector has been considered throughout the Environmental Statement in relevant sections of the assessments, predominantly the cumulative effects assessment. This includes: Volume 2 **Chapters 6 -11 [APP-047 to APP-052]** and **Chapters 16 – 17** [**APP-057 to APP-058]**, and **Chapters 20, 28** [**APP-061, APP-069]**. **Chapter 3: Alternatives, Volume 2** of the ES [**APP-044**] and **Chapter 4: The Proposed Development, Volume 2** of the ES [**APP-045**] are primarily concerned with providing a description of the Proposed Development and a description of the reasonable alternatives to the Proposed Development studied by the Applicant. However, the AQUIND Interconnector is considered in **Chapter 3: Alternative, Volume 2** of the ES **[APP- 044]** (Paragraphs 3.34 and 3.14.19) and in **Chapter 4: The Proposed Development , Volume 2** of the ES (Paragraphs 4.3.67) **[APP-045]**. The AQUIND Interconnector has been considered as a receptor in **Chapter 7: Other marine users, Volume 2** of the ES **[APP-048]** due to the spatial overlap between the two projects, which has been appropriately noted within the chapter. The Maximum Design Scenario (MDS) for cable crossings has been presented in **Chapter 4: The Proposed Development**, **Volume 2** of the ES **[APP-045]**. The MDS considers the presence of the AQUIND Interconnector and its potential overlap with the Proposed Development, and has informed the relevant assessments in the Environmental Statement (as detailed in AQD01).

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	2.4 The cumulative effects assessment is not sufficient to identify all potential impacts on AQUIND Interconnector and in-combination with it. 2.5 There are not adequate provisions in the draft DCO to provide protections for AQUIND Interconnector. It is necessary to include protective provisions within the DCO for the OWF for the benefit of AQUIND Interconnector, in the interest of ensuring both projects can be delivered without giving rise to unacceptable impacts.		The impacts on the AQUIND Interconnector are appropriately considered within **Chapter 7: Other Marine Users, Volume 2** of the ES **[APP-048]**, including the following sections: Section 7.6 Paragraph 7.6.53 - justification for the low impact of the use of safety zones during construction. Section 7.9 - Impacts from construction vessel activity. Section 7.9 - Paragraph 7.9.20 et seq. impacts on the AQUIND A disposal site. Section 7.9 - Paragraph 7.9.28. impacts on the AQUIND Interconnector during construction phase. Section 7.10 - Impacts on the AQUIND Interconnector during operational phase. Section 7.12 - Cumulative impacts. The Applicant is engaging with AQUIND to discuss the required agreements for both projects to co-exist considering all phases of both projects (i.e., construction, operations, and decommissioning). Embedded mitigation measures have been adequately defined in Table 7-13 of **Chapter 7: Other Marine Users, Volume 2** of the ES **[APP-048]**. Additionally, Section 7.9 Paragraph 7.9.91 states *"The Applicant commits to ongoing consultation with the relevant companies in order to identify the appropriate mitigation which will be agreed through commercial agreement prior to consent to address safety concerns."* The AQUIND Interconnector has been considered in the cumulative effects assessment of all assessments where the AQUIND Interconnector is relevant. This includes: **Volume 2** of the ES **Chapters 6 -11 [APP-047 to APP-052]** and **Chapters 16 – 17 [APP-057 to APP-058]**, and **Chapters 20, 28** [**APP-061, APP-069]**. The Applicant will seek proximity agreements prior to consent with the operators of the AQUIND and Rampion 1 disposal sites to reduce the potential conflicts on the operability of any of the projects that will arise by the overlap between the project areas. Pipeline and cable proximity agreements and crossings are common across the UK Continental Shelf (UKCS), and there are established mechanisms for controlling the level of impact to both Parties. Crossing agreements will be secured to ensure access to an active cable for inspection and maintenance activities. The Applicant is currently engaging with the legal team representing AQUIND to progress discussions on reciprocal protective provisions. Both The Applicant and AQUIND have made representations to the Department of Energy Security and Net Zero (DESNZ) Secretary of State in respect of including protective provisions in the AQUIND DCO.

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LI104.3	3. RESPONSE TO SCOPING OPINION AND GENERAL COMMENTS ON PROJECT CONSIDERATION 3.1 By way of background information, AQUIND Limited has previously commented on the scoping report submitted for the OWF on 3 August 2020 and in response to statutory consultation for the OWF on 16 September 2021. Specific items raised by AQUIND in those responses were as follows: 3.1.1 advising RED to engage further with AQUIND to inform the project design evolution for the OWF (which was based on an area of search for the OWF Array Area at the time); 3.1.2 advising that AQUIND would expect RED to consider suitable standoff distances between AQUIND Interconnector cables, and as infrastructure is within 1 nautical mile (NM) of AQUIND Interconnector it was requested that RED fully engage to understand the implications; 3.1.3 reiterating the need for RED to consider AQUIND Interconnector at an early stage of the project design and to adequately consider the AQUIND Interconnector project from a cumulative effects assessment perspective as part of their offshore application and supporting assessment; and 3.1.4 making clear that the proposed project boundary for RED overlapped with the Order limits for AQUIND Interconnector and the registered disposal sites. 3.2 Despite providing constructive feedback to RED and making clear the importance of considering the overlap of the two projects and ensuring that the assessments undertaken to support the OWF adequately assess AQUIND interconnector: 3.2.1 there has been no engagement by RED in relation to the overlap of the OWF with the Order limits for AQUIND Interconnector; 3.2.2 it is apparent that despite Scoping Report for AQUIND Interconnector being submitted to PINS in 2018, the DCO application submission in November 2019, and the designation of two disposal sites (WI048 and WI049 which are referred to as AQUIND Site A and B respectively in the RED application) in connection with the construction of AQUIND Interconnector, no consideration of AQUIND Interconnector, including spatial overlap of the OWF and the Order limits for AQUIND Interconnector, has been made as part of the site design and the consideration of alternatives for the OWF. 3.3 Accordingly, it is identified that there has not been adequate engagement with AQUIND or consideration of AQUIND Interconnector as part of the application for a DCO for the OWF, or moreover in the consideration of alternatives and the design		Project update meetings held on 17 August 2021, 16 November 2023 and 15 February 2024. Discussions included Rampion 2 and AQUIND projects updates and potential interaction between both projects. Detail on the current status of the negotiations in regards to the issues between the Parties is not duplicated here, but draft documents have been exchanged and the Applicant anticipates that the necessary agreements will be in place before the end of the Examination.

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	evolution of the OWF, with little to no acknowledgement of the overlap by the OWF of the Order limits for AQUIND Interconnector.		
LI104.4	4. CLARIFICATIONS IN RESPECT OF THE OVERLAP OF AQUIND INTERCONNECTOR 4.1 In general, there is a lack of detail provided on the location of the OWF project infrastructure in the Offshore Array Area, including location of Wind Turbine Generators (WTGs), offshore substation platforms (OSPs), and cables (array and export cables). 4.2 There is also no consideration of the presence and overlap with AQUIND Interconnector within the Description of Development Chapter of the ES (ref: APP-045 6.2.4 Environmental Statement - Volume 2 Chapter 4 The Proposed Development), where the only mention of AQUIND Interconnector is that the project is subject to redetermination and that should cable crossings be required a methodology will be agreed with the relevant owners. 4.3 For the avoidance of doubt, there has been no approach to AQUIND by RED in relation to any such agreement to date. 4.4 A summary of the extent of and key points identified in relation to the overlap of AQUIND Interconnector is as follows: 4.4.1 It is identifiable from the Offshore Works Plans (ref: APP-008 2.2.1 Offshore Works Plans) that there will be an overlap of AQUIND Interconnector direct current cable corridor and disposal site WI048 by OWF Work No. 1 – 4, which includes WTGs, OSPs, array, and export cables. 4.4.2 There is currently inadequate detail regarding the layout or location of WTGs within the array, and no acknowledgement of AQUIND Order Limits. This is identified to be an omission from the information that has been submitted that should be addressed through updates to the application. 4.4.3 In AQUIND's view there should be design measures / principles secured noting the presence of AQUIND Interconnector. There should also be consideration of, and reference to, required proximity agreements to ensure minimum distances between WTGs (and OSPs) and AQUIND Interconnector is in line with relevant guidance (e.g. European Subsea Cables Association (2016) Guideline No.6 – The Proximity of Offshore Renewables Energy installations & Submarine Cable Infrastructure in UK Waters (which advises any proposed development within 1 NM of subsea cables requires discussion on separation distances with the aim to agree mutually acceptable proximity agreements)). In the absence of suitable engagement and agreement on this matter we identify that a 1 nautical mile separation distance is necessary to ensure there is certainty both projects can be delivered and operate safely.		Please refer to the Applicant's response to reference **LI104.2**.

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	4.4.4 There is a lack of detail on the proposed seabed preparation activities, methodologies for and the location of works, including more particularly in respect of: (A) methodology for clearance e.g. mass flow excavator (MFE), trailing suction hopper dredger (TSHD) etc.; (B) locations of clearance, even if indicative locations; (C) method and locations for disposal of dredged material; and (D) any consideration of AQUIND Interconnector in connection with such activities, including the two registered disposal sites located in the DCO Order Limits. 4.4.5 The proposed OWF disposal site (being the whole of the Offshore Array Area) directly overlaps with AQUIND Interconnector, including Disposal Site A (WI048). This overlap should not be permissible with other existing registered disposal sites and interconnector projects, and the proposed OWF disposal site boundary should be amended to avoid AQUIND Interconnector plus a suitable buffer. 4.4.6 Coupled with the lack of adequate consideration of AQUIND Interconnector as a receptor in the Other Marine Users Chapter of the ES (Ref: APP-048 6.2.7 Environmental Statement - Volume 2 Chapter 7 Other marine users), there is significant risk that the OWF may significantly impact on the construction and operation of AQUIND Interconnector and that this impact is not yet clearly identified and mitigated. 4.4.7 The OWF application proposes to include Safety Zones (SZs) of 500m and 50 m around WTGs and OSPs, which would prevent access during construction, O&M and decommissioning phases of AQUIND Interconnector, where overlapping with it. There is no detail on the location of the OWF infrastructure, and as such it currently must be assumed that as a worst case that impact will occur. 4.4.8 The number of cable crossings required in connection with the OWF is estimated by RED to be four for the Inter Array Cables (IACs). However, is it not clear how this has been calculated and what assumptions this is based on. Nor is it clear if the proposed crossing parameters are adequate for the number and nature of the crossings required. There is a risk that RED will not have considered an adequate number or size of crossings to facilitate all crossings required where the AQUIND Interconnector cables and IAC are crossed. 4.5 Noting the paucity of information regarding the OWF and how the infrastructure and operations to construct this may overlap with AQUIND Interconnector, AQUIND is concerned that RED have not sufficiently considered AQUIND Interconnector and how the OWF may be delivered without adversely impacting the construction and operation of AQUIND Interconnector. 4.6 Further information on the consideration of AQUIND Interconnector (or lack thereof) is detailed in the below section, which focuses more specifically on the Other Marine Users chapter of the ES (ref: APP-048 6.2.7 Environmental Statement - Volume 2		

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	Chapter 7 Other Marine Users) 5. CONSIDERATION OF AQUIND AS A MARINE USER		
LI104.5	5.1 AQUIND is considered within the Other Marine Users chapter of the ES (ref: APP-048 6.2.7 Environmental Statement - Volume 2 Chapter 7 Other marine users), however the assessment is not identified to consider AQUIND Interconnector adequately for the following reasons: 5.1.1 AQUIND Interconnector is considered as three different developments – interconnector cables, and two disposal sites. This results in the potential to undervalue the possible impacts on AQUIND Interconnector by considering the development in a piecemeal fashion rather than as a single project. 5.1.2 Not all potential impacts on AQUIND Interconnector have been considered (see further info provided below). 5.1.3 In some instances, impacts which have been considered have largely undervalued the magnitude of the impact and the sensitivity of AQUIND Interconnector to them. 5.1.4 There is reliance on embedded mitigation which is not effective and / or adequately secured in the draft DCO. 5.2 The following is a summary of specific issues identified in connection with the Other Marine Users Chapter: 5.2.1 Baseline – there is a failure to consider AQUIND B Disposal site, along with site A, which has potential to be adversely impacted. 5.2.2 The Maximum Design Scenarios (MDS) fail to consider cable crossings. It is imperative that cable crossings and the possible interactions with AQUIND Interconnector are assessed and impacts and mitigations required in relation to those are identified and secured. 5.2.3 In respect of embedded mitigation: (A) It is noted that "Crossing and proximity agreements with known existing pipeline and cables operators will be sought" (see mitigation C50 in Table 7-13 in APP-048 6.2.7 Environmental Statement - Volume 2 Chapter 7 Other marine users). There is a lack of provisions in the draft DCO to adequately secure the need for such agreements, and also to ensure that AQUIND is consulted on key documentation e.g. cable installation plans, construction method statements etc. (B) It is also noted that "RED will apply for Safety Zones post consent. Safety Zones of up to 500m will be sought during construction, maintenance and decommissioning phases. Where appropriate, guard vessels will also be used to ensure adherence with Safety Zones or advisory passing distances, as defined by risk assessment, to mitigate any impact" (see mitigation C56 in Table 7-13 in APP-048		Please refer to the response to item **LI104.2**.

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	6.2.7 Environmental Statement - Volume 2 Chapter 7 Other marine users). As identified above, this 'mitigation' may unacceptably impact AQUIND Interconnector due to the overlap, and because SZs being present may prevent access to AQUIND Interconnector during construction, operation and decommissioning. 5.2.4 There are a number of impacts on AQUIND interconnector which are absent from the assessment and should be included, being: (A) the potential damage to AQUIND Interconnector and / or interaction between the two projects during all phases of development; and (B) the displacement or prevention of access to AQUIND Interconnector during all phases of development. 5.2.5 Where impacts have been assessed (e.g. increased traffic, displacement from SZs, physical presence of infrastructure and temporary increases in suspended sediment concentration (SSC) and deposition) it is considered that the magnitude of the impact and the sensitivity of AQUIND Interconnector to the impact is understated, and that the significance of the impacts is understated as a result. This appears to derive from the lack of proper consideration of the spatial and temporal overlap between AQUIND Interconnector and the OWF, and the failure to consider AQUIND Interconnector and its two disposal sites as a single project. 5.2.6 There are potential impacts on AQUIND Interconnector as a consequence of SSC and deposition which should be assessed, and the absence of assessment provides significant concern that the effects of SSC and deposition have not adequately been considered. As disposal activities in connection with the OWF overlap directly with AQUIND Interconnector the following impacts should also have been included as part of the EIA: (A) The impacts resulting from disposal of material by RED in the AQUIND Interconnector DCO Order limits. (B) Any harder or consolidated material deposited by RED (e.g. drill arisings) in the AQUIND Interconnector DCO Order limit having the potential to impact directly on the AQUIND Interconnector cables. (C) Increasing depth of cover on the AQUIND Interconnector cables resulting in potential overheating of cables.		
LI104.6	6. COMMENTS ON CUMULATIVE EFFECTS ASSESSMENT 6.1 In addition to the comments detailed above regarding the consideration, assessment of impacts on and mitigations required in relation to AQUIND Interconnector, AQUIND has also considered the approach taken by RED to the assessment of cumulative effects, including the in-combination assessment undertaken to satisfy the requirements of the Conservation of Habitats and Species Regulations 2017. 6.2 It is identified that there are several deficiencies in relation to the cumulative effects assessment, and in relation to the manner in which AQUIND Interconnector is considered cumulatively with the OWF.		Please refer to the response to item **LI104.2**.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	6.3 As a general overview in connection with the marine topic chapters in the ES: 6.3.1 Information used for the assessment in relation to AQUIND Interconnector is not current in certain instances. 6.3.2 As noted above, despite being a single project AQUIND Interconnector has been split into three projects, which is not correct and risks undervaluing AQUIND Interconnector and the impacts on it. 6.3.3 Cumulative effects are often screened out as not being cumulative effects without adequate rationale or justification, including because of reliance on mitigation which is not robust or adequately secured. 6.3.4 A number of marine topic chapters do not consider AQUIND Interconnector from a cumulative perspective, despite clear temporal and spatial overlap. 6.3.5 It is often not clear why impacts assessed for the project are not carried through to the assessment of cumulative effects. 6.4 As a general overview in connection with the in-combination assessment undertaken to satisfy the requirements of the Conservation of Habitats and Species Regulations 2017: 6.4.1 Despite the in-combination assessment referring to Appendix 5.4 (ref: APP-128 6.4.5.6 Environmental Statement – Volume 4 Appendix 5.4 Cumulative effects assessment shortlisted developments), there does not appear to be any consideration of AQUIND Interconnector disposal sites activities. The only reference (coded as AQI) to AQUIND Interconnector is relevant to the interconnector cables and not to dredge and disposal activities. There has been no clear consideration of dredge and disposal activities in-combination with AQUIND Interconnector. 6.4.2 The consideration of AQUIND Interconnector does not consistently use updated information based upon re-submission of documentation for the project in connection with its redetermination. As a worst case scenario assessments should be updated based upon the assumption that the construction period of AQUIND and OWF could overlap. 6.5 AQUIND and its appointed consultants proposes to provide more detailed comments in this regard to RED, so that they may update their assessment during the course of the examination for the OWF.		
LI104.7	7. CONCLUSION 7.1 In light of the issues identified AQUIND's current position must be that it objects to the grant of a DCO for the OWF, and this holding objection is issued on this basis. The		As noted in the response to item **LI104.3**, **t**he Applicant and Aquind are in discussion over the agreements that need to be put in place between the two Parties and anticipate these will be concluded before the close of the Examination.

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Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
	issues identified must be addressed, so that the assessment of impacts on and in-combination with AQUIND Interconnector is sufficiently robust, and mitigation necessary in relation to those impacts must be clearly secured. This should then allow for this holding objection to be confirmed to be withdrawn. 7.2 AQUIND is willing to engage with RED to address the issues which have been identified in this RR in the shortest possible timescale, noting the benefit of this for the examination of the application. their is also noted that RED representatives have contacted AQUIND very recently following the submission of the OWF application, and an online meeting is being scheduled between AQUIND and RED for later in November 2023. 7.3 AQUIND is also willing to engage with RED on the form of protective provisions which are required to be included in the DCO for the OWF for the benefit of AQUIND interconnector. 7.4 Should it assist the Examining Authority, AQUIND is willing to engage with RED to produce a Statement of Common Ground and Principal Areas of Disagreement Statement, so that the Examining Authority has a clear record of the issues relevant to the overlap of AQUIND Interconnector by the OWF and of the position in relation to relevant matters as the examination progresses.		

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Table LI105 Applicant's Response to Julian Thorpe

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI105.1	I'm a directly affected party.	029	Noted. The Applicant will respond if and when any particular points are raised.

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Table LI106 Applicant's Response to Susan Turok

Ref	Relevant representation comment	Land Rights Tracker Unique Ref	Applicant's response
LI106.1	The proposal by Rampion for their stage 2 project shows a gross misconception of the environment & infrastructure surrounding the site Although the access route is Kent Street it is in fact a single Lane & totally unsuitable for large heavy lorries . With the impact of long tailbacks on the A272 , joining the A23 to the A24 , cars will use the lane as a cut through. There are deep ditches either side of the single track & cars will become embedded needing roadside assistance to pull them out which will only add to the chaos . Last week an accident closing the A272 caused complete gridlock in the surrounding lanes .With Rampion using our lane this will become a daily occurrance ! The single track lane is totally unsuitable for your heavy plant A resident wishing to exit their property by car will not be able to pass your vehicles - we will become trapped . The A272 , as mentioned before , is a main thoroughfare but has many hidden dips & feeds into a mini roundabout at Cowfold This seriously affects the flow of traffic & is notorious for its frequency of RTA's . With the increase in traffic with Rampion it will be a nightmare for all . The heavy tailbacks & queuing will result in air pollution…. No measure of this level seems to be recorded or taken into account Yet another fundamental flaw in their preparation. Kent Street suffers severely from surface water flooding as does the local vicinity How is this suitable for heavy plant , excavation & cable laying ? Environmentally Rampion is the death knell for both wildlife & our natural habitat. Spillage , (already recorded in Rampion 1) the use of weed killer will add to water & land pollution killing off many of the rare & endangered species that have been recorded in this area The timescale - currently expected to be 5 years - will impact on resident's mental health & property prices We know this estimate is grossly massaged to appease those of us who live peacefully & quietly in the countryside around Cowfold . How can we possibly believe this measure when we have the hard fact proof that Rampion 1 was stated to take only 18 months yet instead took 72 months !!! Rampion 2 is a 30% larger project so should we quadruple our 5 years by the same measure ? Kent Street & it's surrounding neighbourhood is home to many listed buildings & is of significant historical importance. If anyone took the time & trouble to monitor this area of outstanding natural beauty over a month or two they would clearly see how utterly flawed this proposal would be especially when there is a far more suitable location less than a mile away in Wineham where the National grid substation is situated & is serviced by a 2 lane road developed especially for this access. The impact economically & environmentally would be less damaging & less disruptive for all who love & cherish this historical area .	041	The Land Interest owns a property to the east of Kent Street and has a presumed ownership of subsoil/ part width of highway) abutting the eastern edge of the highway along Kent Street. This is detailed within the **Land Plans Onshore [PEPD-003]** as Plot 33/4. There is a proposed construction access (Works No.13 – Temporary construction access) that affects part of the existing road, for which Construction Access Rights are sought, over a proportion of Kent Street. Details of the construction access as it passes along Kent Street are shown on Sheet 33 of the **Onshore Works Plans [PEPD-005].** Chapter 6 of the **Consultation Report [APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008 and additional methods of consultation. For traffic related points please refer to the Applicant's response provided to reference **LI17.1** above.

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6. Applicant's Response to Relevant Representations: Members of the public and businesses

Table 6-1 Traffic

PINS ref	Respondent	Summary of relevant representation	Applicant's response
Impact on Cowfold / A272			
	RR-025 RR-036 RR-038 RR-040 RR-065 RR-066 RR-067 RR-070 RR-072 RR-073 RR-076 RR-079 RR-086 RR-090 RR-096 RR-098 RR-101 RR-107 RR-109 RR-112 RR-113 RR-126 RR-130 RR-142 RR-152 RR-154 RR-161 RR-168 RR-170 RR-178 RR-184 RR-191 RR-204 RR-206 RR-210 RR-211	Disruption to Cowfold/A272 during the onshore construction phase to roads and junctions, including residential streets and cycle routes	The assessment of effects of the Proposed Development on the transportation infrastructure, including the strategic and local road network, Public Right of Ways, Sustrans national cycle network, has been undertaken in **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**. Environmental measures will be implemented to manage the potential effects from construction traffic. These are detailed in the **Commitments Register** **[APP-254]** which has been updated at the Deadline 1 submission and are secured through the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]**, **Outline Construction Workforce Travel Plan** **[APP-229]**, **Outline Public Rights of Way Management Plan** **[APP-230]** secured through requirements 24 and 20 of the **draft Development Consent Order (DCO)** **[PEPD-009]**. The **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** which has been updated at the Deadline 1 submission includes: • *Commitment C-157: The proposed heavy goods vehicle (HGV) routing during the construction period to individual accesses will be developed to avoid major settlements of Storrington, Cowfold, Steyning, Wineham, Henfield, Woodmancote and other smaller settlements where possible; and* • *Commitment C-158: The proposed heavy goods vehicle (HGV) routing during the construction period to individual accesses will avoid the Air Quality Management Area (AQMA) in Cowfold where possible.* These commitments are also reflected in Table 5-1 of the **Outline CTMP** **[PEPD-035a]** which has been updated at the Deadline 1 submission and confirms prescribed local Heavy Goods Vehicle (HGV) access routes for all sections of the onshore cable corridor and Table 5-2 which details specific local constraints and proposed management of construction traffic routes. These commitments ensure that HGV construction traffic will route along the A27 and A23 to gain access to the A272 east of Cowfold wherever possible, thereby avoiding the village centre. Therefore, only accesses A-52, A-56 and A-57 will require construction traffic to route through Cowfold Village centre. As calculated by using data included in Table 5-3 of the **Outline CTMP** **[PEPD-035a]** which has been updated at the Deadline 1 submission, the impact of this commitment is the removal

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-212 RR-213 RR-218 RR-223 RR-224 RR-228 RR-231 RR-232 RR-235 RR-236 RR-240 RR-252 RR-253 RR-267 RR-272 RR-273 RR-274 RR-277 RR-278 RR-286 RR-292 RR-293 RR-298 RR-300 RR-307 RR-308 RR-313 RR-314 RR-316 RR-317 RR-318 RR-322 RR-325 RR-328 RR-333 RR-336 RR-346 RR-347 RR-370 RR-371 RR-373 RR-385 RR-394 RR-398 RR-402		of up to 22,000 two-way HGV trips (11,000 HGVs) from Cowfold Village centre over the construction phase. Whilst commitment C-157 and C-158 (**Commitments Register** **[APP-254]** which has been updated at the Deadline 1 submission) discourages traffic from routeing through the Cowfold AQMA, for robustness within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**, it has been assumed that approximately 25% of HGV traffic will route through Cowfold from the A24 and A272 east of the village centre when entering or exiting construction accesses at Oakendene, Kent Street or Wineham Lane. This accounts for the potential delivery of material or equipment to / from locations directly west of Cowfold or use of the Strategic Road Network and provides a robust assessment of impacts within Cowfold. Proposed heavy goods vehicle routes are identified and restrictions on HGV timing are proposed to avoid adverse impact on sensitive receptors. The transport of abnormal indivisible loads (AILs) has been subject to assessment within the **Appendix 23.1: Abnormal Indivisible Loads assessment, Volume 4** of the ES **[APP-196]** and is expected to result in minimal disruption. Paragraph 2.2.8 within **Appendix 23.1: Abnormal Indivisible Loads assessment, Volume 4** of the ES **[APP-196]** describes that AIL vehicles will route along HR99 through urban areas within the City of Brighton to reach the A27 and continue north on the A23, then west on the A272 to the onshore substation and not through Cowfold Village. In relation to construction LGV traffic, these have been split into three categories within the **Outline CTMP** **[PEPD-035a]** (which has been updated at the Deadline 1 submission) to allow consideration of LGV staff traffic, LGV delivery traffic and LGV construction traffic. Whilst no routing restrictions have been placed on LGV staff traffic routing to and from the temporary construction compounds and onshore substation at Oakendene (as is normal for staff routing to a place of work), routes have been identified for all LGV delivery traffic and LGV construction traffic. This also assumes that all LGV construction traffic including deliveries will route to one of the temporary construction compounds first and then if needed onto work sites via Multi-Occupancy Vehicles to limit the amount of construction traffic traveling to individual work sites. Further demand management measures (i.e. sustainable travel) are discussed in the **Outline Construction Workforce Travel Plan** **[APP-229]** and **Outline Operational Travel Plan** **[APP-227]**. No new operational road infrastructure is proposed; however accesses and car parks are proposed as part of the Proposed Development. The likely significant transport effects associated with the construction phase of the Proposed Development have been assessed in **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]**, **Chapter 32: ES Addendum** **o**f the ES (Reference: 6.2.32) (submitted at Deadline 1) and **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[APP-197]** which has been updated at the Deadline 1 submission. At peak construction, taking account of the construction traffic routing contained within the **Outline CTMP** **[PEPD-035a]** which has been updated at the Deadline 1 submission, the impacts listed below have been

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-405 RR-409 RR-420		identified for Cowfold. This information responds to Action Point 17 arising from Issue Specific Hearing 1 [EV3-2020]: • At A281 south of Cowfold (Receptor 23): ▸ An HGV peak week increase of 12 HGVs per day, equivalent to an increase of 7.5% and approximately one HGV per hour; and ▸ A total construction traffic peak week increase of one HGV per day and 71 light goods vehicles (LGVs) per day (5-6 per hour), equivalent to a 1.1% increase in total traffic flow. • The A281 / A272 in the centre of Cowfold (Receptor 24): ▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 3.5% and 3-4 HGVs per hour; and ▸ A total construction traffic peak week increase of 19 HGVs and 154 LGVs (12-13 per hour), equivalent to a 0.7% increase in total traffic flow. • The A272 Station Road west of Cowfold Village centre (Receptor 25): ▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 4.6% and 3-4 HGVs per hour; and ▸ A total construction traffic peak week increase of 19 HGVs and 154 LGVs (12-13 per hour), equivalent to a 0.9% increase in total traffic flow. • The A272 Bolney Road east of Cowfold Village centre (Receptor E): ▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 5.5% and 3-4 HGVs per hour; and ▸ A total construction traffic peak week increase of 19 HGVs and 147 LGVs (12-13 per hour), equivalent to a 0.8% increase in total traffic flow. As noted within Institute of Environmental Management and Assessment (IEMA) 1993 publication *Guidelines for the Environment Assessment of Road Traffic* (IEMA, 1993) and 2023 publication *Environmental Assessment of Road Traffic and Movement* (IEMA, 2023) an increase of less than 10% is not discernible environmental effect as is within day-to-day fluctuations in traffic flow. Therefore, no significant effects are predicted to occur within Cowfold. The construction of the onshore cable has the potential to temporarily affect the public rights of way infrastructure. An **Outline Public Rights of Way Management Plan** **[APP-230]** has been developed which sets out the approach to managing the use of public rights of way during construction. The final Public Rights of Way Management Plan is secured through Requirement 20 of the **Draft DCO** **[PEPD-009]**. Based on the proposed location of the onshore substation and routing of the onshore cable corridor, plus the incorporation of appropriate embedded

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
			environmental measures, no significant effects have been identified in relation to transport receptors from Rampion 2 construction, operation and maintenance, and decommissioning.
Impact on Kent Street			
	RR-038 RR-017 RR-060 RR-064 RR-070 RR-096 RR-098 RR-101 RR-107 RR-109 RR-112 RR-113 RR-161 RR-164 RR-168 RR-178 RR-191 RR-252 RR-273 RR-281 RR-292 RR-297 RR-298 RR-308 RR-311 RR-313 RR-316 RR-317 RR-336 RR-347 RR-365 RR-366 RR-371 RR-402 RR-405 RR-420	Concern regarding the use of Kent Street as an access to the main Oakendene site and the cable workings. Kent Street is a narrow single track country lane with few usable passing places.	The construction access and permanent access to the onshore substation site will be from the A272 only (not via Kent Street) details of which are set out in the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** updated at Deadline 1 and secured through requirement 24 of the **Draft DCO** **[PEPD-009]**. Kent Street remains proposed for use as a temporary construction access (A-61 and A-64) for onshore cable corridor works only. Environmental measures will be implemented to manage the potential effects from construction traffic. These are detailed in the **Outline CTMP** **[PEPD-035a]**.
Impact on Long Furlong Lane			

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-134 RR-325	Concern regarding the use of Long Furlong Lane as an access which is considered to be a very narrow lane used by residents, commercial vehicles based at the Myrtlegrove Estate complex, horse riders, cyclists and walkers.	The Long Furlong Lane access (A-27) is defined as an operational access only on Sheet 12 of the **Onshore Works Plans** (Work No. 14) **[PEPD-005]** for the onshore cable route. Paragraphs 23.4.21 and 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** describe the expected operational and maintenance phase activities which includes periodic testing of the cable through attendance by up to three light vehicles such as vans in a day at any one location. Unscheduled maintenance or emergency repair visits for the onshore cable will typically involve a very small number of vehicles, typically light vans. Infrequently, equipment may be required to be replaced, then the use of an occasional HGV may be utilised, depending on the nature of the repair. (Paragraph 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**).
Impact on Dragons Lane			
	RR-023 RR-038 RR-072 RR-299 RR-300 RR-313 RR-314 RR-347 RR-373	The use of Dragons Lane for access and ongoing maintenance for the onshore substation at Oakendene. The lane is a private unmade, single track road and is a bridleway. It is not considered suitable for heavy goods vehicles (HGVs) due to the narrow width of the road in places.	The Dragons Lane access (A-58) is defined in Table 23-25 within **Chapter 23: Transport, Volume 2** of the ES **[APP 064]** as an operational access only for the onshore cable route shown as part of Work No. 15 sheet 27 of the **Onshore Works Plans** **[PEPD-005]**. There is no route between Dragons Lane and the proposed substation. Paragraphs 23.4.21 and 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP 064]** describe the expected operational and maintenance phase activities which includes periodic testing of the cable through attendance by up to three light vehicles such as vans in a day at any one location. Unscheduled maintenance or emergency repair visits for the onshore cable will typically involve a very small number of vehicles, typically light vans. Infrequently, equipment may be required to be replaced, then the use of an occasional HGV may be utilised, depending on the nature of the repair. (Paragraph 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP 064]**). The Applicant has provided a response in Action Point 19, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (**Document Reference 8.25**) submitted at Deadline 1. The Applicant has provided details on how HGVs would negotiate Dragons Lane in exceptional circumstances during the operational phase of the Proposed Development.
Impact on Michelgrove Lane			
	RR-268	Michelgrove Lane is a narrow access lane which is considered unsuitable for construction site traffic.	The use of Michelgrove Lane as a temporary construction access (A-26) is defined in Table 23-25 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** shown as part of Work No. 13 sheet 27 of the **Onshore Works Plans** **[PEPD-005]**. The proposed Order Limits include flexibility along Michelgrove Lane for the provision of passing places (Sheet 11 and 12 of **Onshore Works Plans** **[PEPD-005]**) to facilitate access along Michelgrove Lane by construction traffic. Up to eight passing places will be installed to provide adequate highway width for two-way traffic. These passing places will be located between 100m and 250m apart at locations shown within the proposed DCO Order Limits and is secured by Commitment C-251 of the **Commitments Register** **[APP-254]** **(**which has been updated at the Deadline 1 submission and is secured by the **Outline Code of**

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
			Construction Practice **[PEPD-009]** requirement 22 of the Draft DCO **[PEPD-009]**). In additional environmental measures will be implemented to manage the potential effects from construction traffic which are detailed in the Outline CTMP **[PEPD-035a]**.
Impact on the A284 and Lyminster			
	RR-008 RR-199 RR-224 RR-366	Concern over the capacity of the A284 road which is considered very busy and tail backs occur.	Traffic volumes during construction of the Proposed Development have been assessed in Chapter 23: Transport, Volume 2 of the ES **[APP-064]** and ES Addendum (submitted at Deadline 1) with Lyminster being identified as receptor 7 within the assessment. The worst-case impact on the A284 in Lyminster is reported as occurring within peak week 70 (Table 23-36) where it is forecast that there will be 7.1% in HGVs as a result of the proposed development. This is an increase of 53 HGVs per week or approximately 10 per day and is therefore not significant in EIA terms. Environmental measures will be implemented to manage the potential effects from construction traffic and these are detailed in the Outline CTMP **[PEPD-035a]**. The Applicant considers that the environmental measures set out in the Outline CTMP **[PEPD-035a]** are sufficiently robust to mitigate the effects of the Proposed Development in respect to traffic and transport during the construction phase. The CTMP is secured through requirement 24 of the Draft DCO **[PEPD-009]**.

Table 6-2 Environment and disturbance

PINS ref	Respondent	Summary of relevant representation	Applicant's response
General			
	RR-004 RR-005 RR-015 RR-017 RR-021 RR-029 RR-036 RR-039 RR-046 RR-050 RR-054 RR-060 RR-064 RR-065 RR-066 RR-067 RR-070 RR-073	Concerns that the Proposed Development may lead to significant environmental effects in relation to the following aspects: • Transport; • Air quality; • Noise and vibration; • Landscape and visual impact assessment (LVIA); • Historic environment; • Terrestrial ecology (including Arboriculture); • Socio-economics; • Water environment; • Human health; • Soils and land use;	The Applicant has undertaken an Environmental Impact Assessment (EIA) which considers and assesses the likely significant effects of the Proposed Development. The Environmental Statement (ES) Volume 2 of the ES **[APP-042** to **APP-072]**, and Volume 4 of the ES [**APP-120** to **APP-222**], reports the findings of the EIA. The ES also provides information about the Proposed Development including its context, a full description of the Proposed Development and its construction, the main alternatives considered, the consultation process that was part of the EIA, and any relevant technical information that has been used to assess the likely significant effects of the Proposed Development. The ES and includes a series of chapters that consider and assess the likely significant effects of the Proposed Development in relation to each relevant environmental aspect. These include the following aspect chapters: • Chapter 17: Socio-economics, Volume 2 of the ES **[APP-058]**; • Chapter 18: Landscape and visual impact, Volume 2 of the ES **[APP-059]**; • Chapter 19: Air quality, Volume 2 of the ES **[APP-060]**;

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-086 RR-096 RR-100 RR-103 RR-108 RR-109 RR-112 RR-113 RR-118 RR-126 RR-132 RR-134 RR-137 RR-143 RR-144 RR-152 RR-154 RR-159 RR-160 RR-164 RR-166 RR-168 RR-194 RR-198 RR-199 RR-209 RR-210 RR-211 RR-215 RR-216 RR-223 RR-224 RR-231 RR-232 RR-235 RR-236 RR-240 RR-242 RR-246 RR-253 RR-259 RR-261 RR-268 RR-269 RR-272 RR-273 RR-276	• Electromagnetic fields; and • Waste and material resources.	• **Chapter 20: Soils and agriculture, Volume 2** of the ES **[APP-061];** • **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]**; • **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**; • **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**; • **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**; • **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**; and • **Chapter 28: Population and human health, Volume 2** of the ES **[APP-069]** (including effects from exposure to electromagnetic fields). There have been opportunities for the development of environmental measures which have been adopted to reduce the potential for environmental impacts and effects. These were included directly into the design of The Proposed Development as embedded environmental measures and are detailed in the **Commitments Register** **[APP-254]** (which has been updated at the Deadline 1 submission). The Commitments Register was initially presented in the Scoping Report and subsequently updated throughout the Statutory Consultation exercises and in the Environmental Statement to reflect design evolution and consultation feedback. Further to this, a number of management plans have been included in the DCO Application such as **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** which provide the details of the proposed embedded environmental measures to manage effects during the construction phase and is secured by requirement 22 of the **Draft DCO** **[PEPD-009]**.

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-278 RR-292 RR-293 RR-300 RR-302 RR-306 RR-307 RR-308 RR-314 RR-325 RR-328 RR-334 RR-336 RR-357 RR-368 RR-371 RR-378 RR-382 RR-387 RR-394 RR-396 RR-398 RR-400 RR-402 RR-405 RR-409		

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Table 6-3 Ecology

Pins ref	Respondent	Summary of relevant representation	Applicant's response
General			
	RR-014 RR-017 RR-019 RR-020 RR-025 RR-030 RR-038 RR-040 RR-043 RR-046 RR-050 RR-051 RR-052 RR-061 RR-065 RR-070 RR-078 RR-086 RR-090 RR-096 RR-098 RR-101 RR-107 RR-111 RR-112 RR-113 RR-118 RR-130 RR-132 RR-132 RR-136 RR-144 RR-154 RR-155 RR-159 RR-161 RR-163 RR-164 RR-167 RR-168 RR-174 RR-186 RR-188 RR-191	Concern about the impact on ecology, wildlife and biodiversity.	The Applicant has undertaken an Environmental Impact Assessment (EIA) of the Proposed Development to consider and assess the likely significant effects of the Proposed Development. **Chapter 6: Coastal processes, Volume 2** of the ES **[APP-047]** to **Chapter 29: Climate change, Volume 2 [APP-070]** of the Environmental Statement (ES) reports the findings of the EIA. The Development Consent Order (DCO) Application includes a series of documents that address the potential effects for onshore and offshore ecology and habitats. These include the following aspect chapters: • **Chapter 8: Fish and shellfish ecology, Volume 2** of the ES **[APP-049]**; • **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-050]**; • **Chapter 11: Marine mammals, Volume 2** of the ES **[APP-052]**; • **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES **[APP-053]**; and • **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**. Further to the Environmental Statement chapters, a number of additional documents have been submitted that are focused on onshore and offshore ecology and habitats: • **Report to Inform Appropriate Assessment [APP-038]**; • **Habitats Regulations Assessment (Without Prejudice) Derogation Case [APP-039]**; • **Draft Marine Conservation Zone Assessment [APP-040]**; • **Outline Landscape and Ecology Management Plan [APP-232]**; • **Outline Project Environmental Management Plan [APP-233]**; • **Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Protocol [APP-237]**; and • **In Principle Sensitive Features Mitigation Plan [APP-239]**. The ES assessments undertaken have concluded that no significant effects on marine ecology, terrestrial ecology or ornithology are likely to occur as a result of the Proposed Development alone or with other relevant projects or plans taking account of environmental measures embedded into the design of the Proposed Development. Similarly, the **Habitats Regulations Assessment (Without Prejudice) Derogation Case [APP-039]** concludes that there will be no adverse effect to any of the protected sites assessed.

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Pins ref	Respondent	Summary of relevant representation	Applicant's response
	RR-199 RR-200 RR-201 RR-204 RR-208 RR-209 RR-210 RR-211 RR-214 RR-215 RR-216 RR-218 RR-220 RR-224 RR-231 RR-236 RR-240 RR-244 RR-246 RR-247 RR-252 RR-253 RR-259 RR-269 RR-272 RR-274 RR-276 RR-277 RR-280 RR-282 RR-284 RR-286 RR-292 RR-298 RR-300 RR-301 RR-302 RR-303 RR-310 RR-311 RR-313 RR-314 RR-315 RR-316 RR-317 RR-319 RR-322		

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Pins ref	Respondent	Summary of relevant representation	Applicant's response
	RR-323 RR-327 RR-329 RR-334 RR-337 RR-338 RR-340 RR-342 RR-343 RR-344 RR-347 RR-355 RR-364 RR-365 RR-366 RR-371 RR-374 RR-378 RR-379 RR-387 RR-394 RR-396 RR-399 RR-405 RR-408 RR-411 RR-412 RR-416 RR-417		
Impact on sea bed and kelp			
	RR-006 RR-011 RR-017 RR-020 RR-024 RR-029 RR-035 RR-043 RR-049 RR-057 RR-061 RR-078 RR-080 RR-088 RR-092	Concern that the Proposed Development will damage the sea bed and impact on kelp reserves.	The potential effects of the Proposed Development on the sea bed and kelp reserves has been addressed in the **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-050]**. The impact of habitat disturbance will represent a local spatial extent, short term intermittent impact, affecting a relatively small portion of the benthic subtidal habitats in the proposed DCO Order Limits. However, the proposed export cable corridor will enter a recently designated "no-trawling zone" and a site for kelp restoration and protection (see paragraph 9.6.36 to 9.6.37 of **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-050]**). Due to the short-term and localised nature of this impact and the tolerance and recoverability of the majority of the benthic receptors including kelp, the assessment concludes that is likely to be no significant effects on the sea bed or for kelp reserves.

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Pins ref	Respondent	Summary of relevant representation	Applicant's response
	RR-095 RR-110 RR-117 RR-128 RR-129 RR-136 RR-156 RR-159 RR-163 RR-167 RR-175 RR-176 RR-186 RR-200 RR-208 RR-230 RR-234 RR-242 RR-291 RR-310 RR-322 RR-326 RR-337 RR-338 RR-342 RR-343 RR-356 RR-372 RR-374 RR-375 RR-377 RR-408 RR-410 RR-417		
Impact on migrating birds and insects			
	RR-019 RR-029 RR-035 RR-037 RR-043 RR-052 RR-053 RR-080 RR-095	Concern about the impact that the Proposed Development will have on migrating birds and insects.	**Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES **[APP-053]** addresses the potential displacement, disturbance, and indirect effects for migrating birds. The assessment concludes that a negligible and not significant effect is likely for all species surveyed. **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]** addresses the potential impact of the Proposed Development on wintering birds. The assessment concludes the likely effect will be negligible and not significant.

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Pins ref	Respondent	Summary of relevant representation	Applicant's response
	RR-110 RR-111 RR-129 RR-163 RR-176 RR-189 RR-225 RR-234 RR-239 RR-282 RR-303 RR-310 RR-323 RR-337 RR-338 RR-349 RR-354 RR-361 RR-377		**Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]** assessed the potential effects of the Proposed Development on invertebrates which included surveying. Key habitats for terrestrial invertebrates are avoided by the onshore cable corridor or are crossed by trenchless crossings, and embedded environmental measures have been included in the DCO Application to minimise, reduce, and avoid potential impacts. The terrestrial invertebrates were scoped out from requiring further assessment due to the lack of pathway of effects and limits potential scale of impact. Migrating insects were not assessed as they were not raised in the Planning Inspectorate's Scoping Opinion **[APP-125]** and the National Policy Statement for Renewable Energy Infrastructure (EN-3) (2023) is silent on the matter, although it specifically mentions collision risks associated with birds and marine mammals. Further recent reviews of potential ecological effects of offshore wind farms have not identified insect collision as a risk. The ES assessments undertaken have concluded that no significant effects on marine ecology, terrestrial ecology or ornithology are likely to occur as a result of the Proposed Development alone or with other relevant projects or plans taking account of environmental measures embedded into the design of the Proposed Development. Similarly, the **Report to Inform Appropriate Assessment** **[APP-038]** concludes that there will be no adverse effect to any of the protected sites assessed.
Impacts on hedgerows and trees			
	RR-065 RR-066 RR-112 RR-161 RR-209 RR-235 RR-236 RR-239 RR-246 RR-247 RR-252 RR-286 RR-297 RR-298 RR-317 RR-322 RR-337 RR-338 RR-409	Concern that the Proposed Development will result in damage to trees and hedgerows.	Losses of hedgerows, scrub and woodland have been minimised through avoidance in the design of the Proposed Development. Where notching of hedgerows is required during the construction of the onshore cable corridor, reinstatement will be within 10 years in most cases. The **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** includes Vegetation Retention Plans which show areas of vegetation to be retained. The permanent losses of tree lines or hedgerows within the onshore substation footprint will be compensated for through the landscape design and secured through the **Outline Landscape and Ecology Management Plan (LEMP)** **[APP-232]** (through woodland, scrub, and parkland tree planting in the area around the substation secured through requirements 22 and 12 of the **Draft DCO** **[PEPD-009]**. Following Issue Specific Hearing 1 (ISH1) in February 2024, the Applicant has committed to reviewing vegetation losses and the outcome of which will be provided at a future Examination deadline. Embedded environmental measures, detailed within **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]** will be implemented to necessitate unnecessary tree removal or pruning, alongside maintaining the quality, condition, or safety of remaining trees.
Impact on nightingales			

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Pins ref	Respondent	Summary of relevant representation	Applicant's response
	RR-060 RR-070 RR-128 RR-313 RR-346 RR-347 RR-365 RR-366 RR-379 RR-409	Concern that the Proposed Development will have an adverse impact on nightingales.	The impact of the Proposed Development on breeding birds, including nightingale, has been assessed in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**. The assessment concludes that the impact on breeding birds from reduction in habitat connectivity, disturbance and displacement will not be significant. The Indicative Landscape Plan within the **Design and Access Statement (DAS) [AS-003]**, details additional habitat which is being provided to support the local nightingale population at the onshore substation at Oakendene. This includes wet woodland, woodland, scrub and parkland trees. Compliance with the principles in the **DAS [AS-003]** for the detailed design of the substation is secured through requirement 8 of the **Draft DCO [PEPD-009]**.

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Table 6-4 Route / alternatives

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-001 RR-015 RR-027 RR-037 RR-049 RR-052 RR-057 RR-060 RR-058 RR-098 RR-101 RR-110 RR-109 RR-118 RR-126 RR-128 RR-132 RR-132 RR-141 RR-144 RR-145 RR-158 RR-168 RR-168 RR-170 RR-172 RR-198 RR-201 RR-215 RR-216 RR-231 RR-234 RR-239 RR-242 RR-259 RR-277 RR-284 RR-287 RR-291 RR-297 RR-303 RR-307 RR-310 RR-313 RR-314 RR-315	A number of general concerns about the onshore cable route which largely lack any specific locational references.	**Chapter 3: Alternatives, Volume 2** of the **Environmental Statement (ES) [APP-044]** details how the design of the Proposed Development has evolved and demonstrates that all aspects of site selection, site access and future access requirements have been incorporated into the design of the Proposed Development to minimise and mitigate adverse impacts. The chapter explains the reasonable alternatives considered for the onshore cable corridor and the reasons for selection of the preferred option. At this stage, the description of the Proposed Development is indicative and a 'design envelope' approach has been adopted which takes into account the Planning Inspectorate's Advice Note Nine: Rochdale Envelope (Planning Inspectorate, 2018). The provision of a design envelope is intended to identify key design assumptions to enable the environmental assessment to be carried out whilst retaining enough flexibility to accommodate further refinement during detailed design. Further details on the use of the Rochdale Envelope for Nationally Significant Infrastructure Projects are provided in line with the Planning Inspectorate Advice Note Nine: Rochdale Envelope (Planning Inspectorate, 2018), and is further described in **Chapter 4: The Proposed Development**, **Volume 2** of the ES [**APP-045**] in paragraphs 4.1.4 to 4.1.6. The use of the Rochdale Envelope approach is recognised in paragraph 4.2.8 of NPS EN-1 (DECC, 2011a), and is also reflected in the newly designated NPS (Department of Energy Security and Net Zero 2023a; 2023b and 2023c). This approach has been adopted. **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** provides a detailed description of the onshore cable corridor. **Section 4.5** details the onshore cable corridor from landfall at Climping through to the proposed new onshore substation and then onto the existing National Grid Bolney substation. A description of specific locations along the route where optionality has been retained is also provided.

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-322 RR-378 RR-387 RR-396 RR-398 RR-400 RR-402		

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Table 6-5 Electromagnetic fields

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-038 RR-065 RR-107 RR-313 RR-347 RR-394 RR-409	Health concerns relating to electromagnetic fields / radiation.	**Chapter 28: Population and human health, Volume 2** of the ES **[APP-069]** and **Appendix 28.2: Electro Magnetic Field Health Evidence Base, Volume 4** of the ES **[APP-220]** addresses the potential impacts as a result of electric and magnetic fields. The assessment concluded that the magnitude of impact on human health from potential exposure electro and magnetic fields for both the 275 kilovolt (kV) cable system along the onshore cable route from landfall (Climping) to the new onshore substation (Oakendene) and 400kV cable system between the new onshore substation (Oakendene) and the National Grid connection point (National Grid Bolney substation) is negligible, which is not significant in EIA terms. Therefore, the Rampion 2 electricity transmission infrastructure is well below the public health exposure guidelines and can be considered safe for human receptors.

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Table 6-6 Health and wellbeing

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-038 RR-063 RR-090 RR-096 RR-118 RR-144 RR-168 RR-210 RR-222 RR-232 RR-236 RR-267 RR-274 RR-292 RR-302 RR-313 RR-333 RR-344 RR-347 RR-353 RR-365 RR-366 RR-370 RR-371 RR-394 RR-420	Concern that the Proposed Development will have a detrimental impact on physical and mental health.	**Chapter 28: Population and human health, Volume 2** of the ES **[APP-069]** and **Appendix 28.1: Human health baseline, Volume 4** of the ES **[APP-219]** assessed the potential impacts for population and human health. The assessment concluded that the magnitude of impact on human health from potential changes to air quality, noise and vibration exposure, transport nature and flow rate, visual amenity, land contamination, access to opportunities for physical activity, socio-economic factors, and electromagnetic fields as a result of the Proposed Development is negligible, which is not significant in EIA terms.

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Table 6-7 Noise

PINS ref	Respondent	Summary of relevant representation	Applicant's response
Noise during the construction phase			
	RR-008 RR-026 RR-050 RR-061 RR-063 RR-080 RR-087 RR-096 RR-118 RR-130 RR-132 RR-154 RR-156 RR-167 RR-188 RR-199 RR-210 RR-217 RR-222 RR-234 RR-242 RR-268 RR-291 RR-298 RR-302 RR-313 RR-327 RR-334 RR-344 RR-354 RR-363 RR-382 RR-405 RR-423	Concern over noise and disturbance on human receptors (including tourism) during the construction phase of the Proposed Development (including offshore piling works).	The Applicant has undertaken an EIA of the Proposed Development to consider and assess the likely significant effects of the Proposed Development. The DCO Application includes a series of documents that address the potential effects of noise on human receptors. These include the following aspect chapters: • **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]**; • **Chapter 21: Noise and vibration, Volume 2** of the ES **[APP-062]**; and • **Chapter 28: Population and human health, Volume 2** of the ES **[APP-069]**. Section 21.15 in **Chapter 21: Noise and vibration, Volume 2** of the ES **[APP-062]** assessment concluded that the potential effect during the construction phase will be negligible to minor adverse following the implementation of embedded environmental measures, which is not significant in terms of EIA. The noise from offshore piling (see Section 21.9 in **Chapter 21: Noise and vibration, Volume 2** of the ES **[APP-062]**) at onshore receptors has been predicted using Danish Statutory Order no. 1284 (2011), which is currently the most reliable prediction methodology for noise over water. The assessment concluded that the magnitude of impact on human health from offshore piling noise exposure as a result of the Proposed Development is negligible, which is not significant in EIA terms. **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** assessed the potential effects on tourism. The assessment concluded that there would be a negligible effect on the tourism economy, which is not significant in terms on EIA. The **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** outlines management measures and mitigation proposed at all onshore construction areas to reduce the effects relating to noise and vibration from construction of the Proposed Development, including commitments C-10, C-26, and C-263. Commitment C-263 for the production of a Noise and Vibration Management Plan (NVMP) during detailed design based on the principles in the **Outline CoCP** **[PEPD-033]**, detailing best practicable means and location specific mitigation. The NVMP will be based on further assessment on where noisy construction activities, including piling will occur. Additional measures will be considered at these locations, such as mufflers, acoustic shrouds, and temporary noise barriers, where appropriate. Stage specific CoCPs are secured through requirement 22 of the **Draft DCO** **[PEPD-009]**.

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
Noise during the construction and operational phase on marine species			
	RR-129 RR-189 RR-225	Concern over noise and vibration during construction and operation of offshore wind turbines on marine species.	The Applicant has undertaken an EIA of the Proposed Development to consider and assess the likely significant effects of the Proposed Development. The DCO Application includes a series of documents that address the potential effects of noise on ecological receptors. These include the following aspect chapters: • **Chapter 8: Fish and shellfish ecology, Volume 2** of the ES **[APP-049];** • **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-050]**; • **Chapter 11: Marine mammals, Volume 2** of the ES **[APP-051]**; and • **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES **[APP-052]**. The assessment concluded that the magnitude of impact on all marine species in the chapters outlined above (fish, shellfish, benthic, marine mammals, ornithology) from potential changes to noise and vibration exposure as a result of the construction and operation of the Proposed Development following the implantation of embedded environmental measures is negligible to minor adverse, which is not significant in EIA terms. A number of plans and protocols that outline the management measures and mitigation proposed throughout the offshore construction stage to reduce the effects of noise and vibration on marine ecology receptors, including commitments C-52, C-54, C-102, C-265, C-274, C-280, and C-281. These measures restrict the offshore construction works programme around sensitive breeding seasons, use of low noise technology, sequencing approach, soft start and ramp up procedures: • **Draft Piling Marine Mammal Mitigation Protocol [APP-236]** secured through condition 11 (l) of Schedule 11 and 12 of the **Draft Development Consent Order (DCO) [PEPD-009]**; • **Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Protocol [APP-237]** secured through condition 11 (m) of Schedule 11 and 12 of the **Draft DCO [PEPD-009]**; and • **In Principle Sensitive Features Mitigation Plan [APP-239]** secured through condition 11 (k) of Schedule 11 and 12 of the **Draft DCO [PEPD-009]**.
Operational Noise from wind turbine generators			
	RR-026 RR-095	Concern over operation noise from wind turbine generators on onshore receptors	A screening assessment of the operational noise effects of the Proposed Development as a result of the Wind Turbine Generators on residential receptors during the operation and maintenance phase have been assessed

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
			in **Chapter 21: Noise and vibration, Volume 2** of the ES **[APP-062]** and **Appendix 21.3: Preliminary operational noise predictions, Volume 2** of the ES **[APP-178]**. The offshore array area is located approximately 13km from the nearest shoreline. This screening assessment concluded that no residential receptors are predicted that there will be no exceedances above the lower applicable noise limit (35dB L_{A90}) as stated in ETSU-R-97 The Assessment and Rating of Noise from Wind Farms (The Working Group on Noise from Wind Turbines, 1996). Therefore, a detailed noise assessment is not required as it is expected that the Wind Turbine Generators will comply with the noise limits in accordance with ETSU-R-97.

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Table 6-8 Brookside Caravan Park

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-008 RR-014 RR-044 RR-097 RR-150 RR-194 RR-199 RR-201 RR-210 RR-224 RR-229 RR-245 RR-271 RR-302 RR-366 RR-367	A number of residents of Brookside Caravan Park have raised concerns over the proximity of the Proposed Development to the Caravan Park, particularly the proposed vehicular access.	**Transport** The proposed routing strategy is detailed in the **Outline CTMP** **[PEPD-035a]** which has been updated at the Deadline 1 and is secured by Requirement 24 of the **Draft DCO** **[PEPD-009]**. The closest construction access junction to Brookside Caravan Park on the western side of the A284 is A-12 located approximately 60m north of the Caravan Park boundary as shown on Sheet 7 of the **Access, Rights of Way and Street Plans** **[APP-012]**. For clarity, access A-11 located immediately north of the Caravan Park boundary is for operational purposes only as shown on sheet 5 within the **Onshore Works Plans** **[PEPD-005]**. Operational access requirements will be minimal with scheduled maintenance of the onshore cable route required every 2-5 years generating approximately three LGVs for one day. Some unscheduled or emergency repair visits may also be required but this also typically involve a very small number of LGVs. As detailed in Table 5-3 and 6-2 of the **Outline CTMP** **[PEPD-035a]** (which has been updated at the Deadline 1 submission) A-12 is a construction access which will generate 878 HGV two-way movements and 456 LGV two-way movements across the whole four-year construction programme. This compares to a daily HGV flow on the A284 of approximately 700 vehicles. At peak construction the Proposed Development will generate 234 HGV two-way movements, which is approximately 47 HGVs per day (assuming 5-day week) or one every 14 minutes (assuming a 12-hour working day). The peak in LGVs is 60 LGV two-way movements in a week, which is 12 a day, and 1 per hour. A-13 is an operational and construction access on the eastern side of the A284. As detailed in Table 5-3 and 6-2 of the **Outline CTMP** **[PEPD-035a]** (which has been updated at the Deadline 1 submission) at access A-13 there will be up to 562 HGV two-way movements and 480 LGV two-way movements. If access A-13 is used for all construction traffic movement over A-15 during the peak week of construction activity, there will be 130 HGV two-way movements and 96 LGV two-way movements. This is the equivalent to 26 HGV two-way movements per day or 2-3 per hour and 19 LGV movements per day and 1-2 per hour. However, it is noted that there is optionality at this location for the contractor to use either Access A-13 or A-15 (north of Lyminster) or a combination of both. Given that access A-15 provides access directly from Lyminster bypass (currently under construction) and adheres to Commitment C-157 to avoid routing HGV traffic through smaller settlements (**Commitments register** **[APP-254]** (which has been updated at the Deadline 1 submission) it is considered that use of Access A-13 is unlikely by the contractor. The closest receptor to the Caravan Park identified within the **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and **Chapter 32: ES Addendum** (reference 6.2.32) (that has been submitted at Deadline 1) is Lyminster village (receptor 7), located 250m north of the Caravan Park access, because of

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
			residents living in properties adjacent to the highway and pedestrian traveling along the A284. Whilst the Caravan Park was not identified as a sensitive receptor itself, it will experience the same impacts as those identified for Lyminster. Table 23-36 identified a worst-case increase in HGV traffic of 7.1% during construction of the and therefore concluded that the proposed development would not generate any significant environmental effects on the A284. This level of impact is also identified within the sensitivity test which will be used within **Chapter 32: ES Addendum** (Document reference: 6.2.32) (which has been submitted at the Deadline 1 submission). As such the Proposed Development will not generate any significant environmental effects in relation to traffic at this location. **Noise and vibration** Noise sources relating to the onshore construction works and construction road traffic have been considered in **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]**. During the construction phase, the noise generated at Brookside Caravan Park will be in relation to the trenchless crossing (where the major noise sources will be located to the east of the A284), and the trenched cable route and associated haul route (located approximately 50 m north of the nearest caravan). The noise from the trenchless crossing (under the A284) works was assessed as Trenchless Crossing ID TC-05 at the building at the eastern boundary of the caravan park as Receptor ID HDD05-SW. This assessment can act as a proxy for the worst case levels on the site (as the closest point). The predicted unmitigated levels at the building were 63dB. This mean that noise will be audible for the duration of the trenchless crossing works (currently assessed as being 1.7 weeks' duration of construction activity), however, this is not significant with reference to the code of practice for noise on construction sites, British Standard 5228 part 1:Noise (British Standards Institution (BSI), 2014). The haul route will be used during the onshore trenching works. The onshore trenching works will be in the overall vicinity of the caravan park for 4.7 weeks, individual occupiers may be subject to a high magnitude of noise for approximately 2 days as the works pass by, however, this temporary nature of disturbance, means that such noise will not be significant in EIA terms. Whilst the onshore trenching works are undertaken, the haul road will be used by up to 3 HGVs per hour. The mitigation provided by locating this route 50m or more from caravans, means that there will be no significant noise or vibration from such vehicle movements this is secured through requirement 22 of the **Draft DCO [PEPD-009]**, although the vehicles are likely to be audible above the ambient noise from the A284. Following the receipt of Relevant Representations, a new commitment (C-287) has been added to the **Commitment register [APP-254] and Outline Code of Construction Practice [PEPD-033]** (updated for the Deadline 1 submission) and is secured through requirement 22 of the **Draft DCO [PEDP-009]**. This requires the Applicant to install an acoustic barrier on the edge

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
			of the works north of Brookfield Caravan Park. The barrier will be of a suitable dimension and sited appropriately to manage noise impacts at this location for the duration of the construction phase. Unmitigated construction phase noise is predicted to be below the threshold for significance at the caravans on Brookside Caravan Park. The use of the **Outline Code of Construction Practice** **[PEPD-033]** and associated management plans, and the embedded design, i.e. locating the haul route with a separation of at least 50 m, will further minimise, although not eliminate disturbance from noise. The operational only access immediately to the north of the caravan park will not give rise to significant levels of noise. Infrequent vehicle pass-bys (for periodic testing or unscheduled maintenance, as described above) would not be out of character for the area, given that agricultural vehicles would be expected to access the field and that there is an A-road adjacent to the east boundary of the caravan park. **Air quality** Air quality and dust emissions relating to construction activities and the construction access roads in the Brookside Caravan Park area have been considered in **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]**. The duration of activities on the nearby Trenchless Crossing ID TC-05 is estimated to be 4.7 weeks and therefore construction activities are very short term in the locality of the caravan park. Air dispersion modelling of emissions to air from the Trenchless Crossing activities have indicated that air quality impacts on receptor R65 (representing the caravan park) are negligible. The qualitative dust assessment concluded that with no mitigation in place the risk of dust soiling from construction traffic is Low. This finding that without dust controls there would be a Low risk of impact has informed the dust management measures that would be implemented as part of the Proposed Development (see Table 19-36 of **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]**). These measures are expected to ensure that the risk of impact is reduced to negligible levels. These measures have informed the **Outline Code of Construction Practice** **[PEPD-033]** and are secured via Requirement 22 of the **Draft DCO** **[PEPD-009]**. **Terrestrial ecology and nature conservation** Terrestrial ecology and nature conservation receptors relating to the proposed Development have been considered in the **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**. As presented in **Figure 7.2.1b (B) Hedgerow retention and treeline retention plan,** page 152 of the **Outline Code of Construction Practice** **[PEPD-033]**, in this location a length of hedgerow will be temporarily removed. This is on the A284 roadside and allows construction traffic to access the working area without using the existing field access that is adjacent to the caravan park. Onshore cable works are temporary,

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
			and the hedgerow would be reinstated. Given level of loss and extent of habitat in the area (and location at the roadside) breeding birds would be expected to remain present in the area. The onshore cable works are confined to arable fields when in vicinity of the caravan park. Water voles, hedgehogs, rabbits, and foxes would all be able to coexist, particularly as the areas being worked on would not be particularly attractive to these species (I.e. they will be located closer to hedgerows and other cover). Further information regarding the embedded environmental measures to avoid, prevent or reduce the terrestrial ecology and nature conservation impacts arising during the construction of the Proposed Development are presented in the **Outline Code of Construction Practice [PEPD-033]** secured through requirement 22 of the **Draft DCO [PEPD-009]**. **Landscape and Visual Impacts** The likely significant landscape and visual effects of the Proposed Development have been assessed in the Environmental Statement **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**. Wherever practicable, likely adverse effects have been avoided or minimised through embedded environmental measures in the design of the Proposed Development, taking into account the findings of the Environmental Statement, consultation with stakeholders and national and local policy requirements. The likely significant onshore landscape and visual impacts (see Table 1-44 of **Appendix 18.4 Visual Assessment, Volume** of the ES **[APP-170]**) linked to the onshore cable corridor are limited to the construction phase and impacts will be temporary. The landscape and visual effects are set out in Table 1-44 of **Appendix 18.4 Visual Assessment, Volume** of the ES **[APP-170].** No significant effects on visual receptors have been identified within Brookside Caravan Park or along its boundary. Non-significant effects will be limited to the construction phase and impacts will be temporary. **Human Health** **Chapter 28: Population and human health, Volume 2** of the ES [APP-069] draws from and builds upon key outputs from the inter-related technical aspects assessed within the ES with the potential to influence human health. These include air quality, noise, and transport, the conclusions of which in respect of the Brookside Caravan Park are outlined above and are limited to the construction phase. While changes in noise exposure will be audible for the duration of drilling (including both day time and night time periods), trenchless crossing activities would be temporary and transient in nature and are not reported to be significant at the worst-case affected receptor within Brookside Caravan Park. The temporary and transient nature of trenchless crossing activities ultimately limits the potential for health and wellbeing effects which to occur would require long-term exposure to changes in the noise environment. Noise from traffic (during

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
			construction and operation and maintenance) would not be significant. As a result, the change in noise exposure would not be sufficient to result in any adverse health or wellbeing effects for residents of Brookside Caravan Park. Changes in local air quality are reported to be negligible and the potential for dust soiling (and associated annoyance effects, impacting wellbeing) would also be negligible following the implementation of dust mitigation measures. Such short-term and negligible changes in the air quality environment would not be sufficient to result in any adverse health or wellbeing effects for residents of Brookside Caravan Park. Changes to traffic as a result of the Proposed Development are of temporary nature and not significant following the implementation of mitigation measures. As a result, the change in traffic would not be sufficient to result in any adverse health or wellbeing effects for residents of Brookside Caravan Park. **Alternative Routing Considered for construction access A-12** Alternative routing from the A284 north of Lyminster would have had to cross sensitive ecological habitats and wetlands over a significantly longer distance. Routing construction traffic through Lyminster would not have been possible due to narrow streets through the village. The railway line to the south and to the west further limited potential access routes. Due to this, the selection of the option via construction access A-12 was made. **Consultation** The Applicant first consulted with Brookside Holiday Camp Limited, owner of Brookside Caravan Park, in July 2021. Chapter 6 of the **Consultation Report** **[APP-027]** provides information on the consultation material provided to the Land Interests under Section 42 of the Planning Act 2008.

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Table 6-9 Pollution

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-067 RR-096 RR-098 RR-099 RR-101 RR-103 RR-113 RR-130 RR-161 RR-186 RR-204 RR-206 RR-210 RR-210 RR-236 RR-246 RR-253 RR-262 RR-267 RR-313 RR-317 RR-326 RR-333 EE-334 RR-346 RR-347 RR-363 RR-371 RR-398	Concern that Proposed Development will increase the risk of pollution, including the potential threat of water pollution into the River Adur and air pollution.	**Chapter 26: Water environment, Volume 2** of the ES **[APP-067]** addresses the potential impact of pollution to the River Adur, resulting from the Proposed Development. The assessment concludes that there is likely to be no significant impact to water quality in the River Adur during the construction or operational phases of the Proposed Development. The **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** includes embedded environmental measures which will be implemented at all construction areas to prevent pollution events occurring and limit the impact to nearby receptors, including watercourses, this includes C-8, C-14, C-72, C-129, C-150, C-151, and C-167. The Contractor(s) will be required to produce and adhere to a Pollution Prevention Plan (PPP) and Pollution Incident Response Plan (PIRP), which will be specific to each construction stage and based on measures identified in the **Outline CoCP** **[PEPD-033]** secured through requirement 22 of the **Draft DCO** **[PEPD-009]**. **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** considers potential impacts from dust and combustion emissions (e.g. Nitrogen Dioxide) from construction activities and the potential impacts from construction traffic. With the implementation of embedded environmental measures (for example commitment C-24 within the **Outline CoCP** **[PEPD-033]**) no significant effects have been identified on air quality during the construction, operation and maintenance and decommissioning phases.

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Table 6-10 Cost, viability, alternate sources of electricity

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-004 RR-006 RR-028 RR-029 RR-037 RR-053 RR-057 RR-092 RR-141 RR-154 RR-160 RR-186 RR-197 RR-231 RR-239 RR-276 RR-280 RR-293	Concern over the cost and financial viability of the Proposed Development, and a view that there are better alternate sources of energy available.	The Applicant is Rampion Extension Development Limited (RED) which is a joint venture between RWE Renewables UK Limited (RWE) and a consortium of Macquarie and Enbridge with RWE being the majority shareholder and Development Service Provider for the joint venture. RWE currently owns interests in nine operational offshore wind farms in the UK in English, Welsh and Scottish Waters and is currently constructing a further two offshore wind farms in the North Sea. The Applicant has a demonstrable track record of successfully delivering renewable energy infrastructure. The **Funding Statement** **[AP-025]** outlines the assessment by the Applicant that The Proposed Development is commercially viable. The importance of large-scale offshore wind in contributing to the mix of energy generation required in the UK is clear in the original version of NPS EN-1 (DECC, 2011), against which the DCO Application is assessed, and NPS EN-1 (DESNZ, 2023a) which came into force in January 2024. Furthermore, NPS EN-1 (DESNZ, 2023a) defines large scale offshore wind infrastructure as a Critical National Priority (CNP). Section 3.2 within **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** outlines the site selection for the offshore array and examines the considerations that led to the identification of the location as a suitable location for offshore wind including taking into account the findings of the Strategic Environmental Assessment (SEA) of suitable areas for offshore wind conducted by the then Department of Energy and Climate Change (DECC) in 2009.

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Table 6-11 Location of windfarm and efficiency

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-013 RR-019 RR-020 RR-024 RR-029 RR-035 RR-043 RR-049 RR-062 RR-065 RR-080 RR-082 RR-087 RR-089 RR-091 RR-092 RR-110 RR-111 RR-118 RR-124 RR-136 RR-143 RR-151 RR-152 RR-153 RR-154 RR-156 RR-163 RR-172 RR-176 RR-179 RR-186 RR-187 RR-189 RR-200 RR-209 RR-222 RR-225 RR-234 RR-241 RR-242 RR-269 RR-279 RR-280 RR-292 RR-296	Concern that the Proposed Development could be sited more efficiently and that it will not produce sufficient energy.	The Proposed Development is sited in a location which is suitable for constructing an offshore wind farm and has a sufficient wind resource to make it viable. The operational Rampion 1 project demonstrates the viability siting offshore wind farms in the general area along the Sussex coast line. The Proposed Development is anticipated to produce the annual equivalent of that needed to supply over 1 million homes.

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-309 RR-310 RR-315 RR-319 RR-320 RR-322 RR-323 RR-326 RR-334 RR-337 RR-343 RR-348 RR-351 RR-352 RR-353 RR-354 RR-355 RR-361 RR-364 RR-374 RR-386 RR-401 RR-408 RR-410		

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Table 6-12 Impact on Tourism

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-019 RR-020 RR-043 RR-046 RR-051 RR-063 RR-118 RR-129 RR-136 RR-151 RR-209 RR-214 RR-242 RR-269 RR-279 RR-284 RR-310 RR-321 RR-322 RR-323 RR-326 RR-337 RR-338 RR-351 RR-354 RR-374 RR-386 RR-408 RR-423	Concerns that the Proposed Development will adversely affect tourism and the tourist industry.	**Chapter 7: Other marine users, Volume 2** of the ES **[APP-048]** addresses the potential effects of the Proposed Development on recreational boating, sailing, and fishing. It also includes an assessment of effects on diving and water sports (including surfing). The assessments conclude the likely effects from the Proposed Development on these activities is not significant in EIA terms. The assessment within **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** explores the impact on tourism and finds that overall, when all influencing factors are considered, the effect of the Proposed Development on the volume and value of tourism across Sussex is expected to be negligible, which is considered not significant in EIA terms.

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Table 6-13 Flooding and flood risk

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-132 RR-141 RR-206 RR-306 RR-371 RR-387 RR-420	Concern that the Proposed Development will increase the risk of flooding generally.	**Chapter 26: Water environment, Volume 2** of the ES **[APP-067]** considers the potential effects of the Proposed Development to receptors sensitive to flood risk. The likely impact of the Proposed Development on flood risk receptors has been assessed to be not significant. This has been informed by the findings within **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**, and considers the embedded environmental measures detailed in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**, key measures include: C-5, C-28, C-73, and C-117 which are secured through requirement 22 of the **Draft DCO** **[PEPD-009]**.
Climping Beach			
	RR-094	Concern over the impact of the Proposed Development on the flood defences at Climping Beach.	**Chapter 26: Water environment, Volume 2** of the ES **[APP-067]** considers the potential effects of the Proposed Development on the flood defences at Climping Beach. Consultation with the Environment Agency has identified the need for Flood Risk Activity Permit (FRAP) before works commence. Engagement will continue with the regulator as part of the permit application to approve a construction methodology that ensures integrity of the flood defence. Relevant embedded environmental measures of the **Commitments Register** **[APP-254]** (commitments C-125 and C-247) (which has been updated at the Deadline 1 submission) have also been put forward to ensure that there will be no impact on the flood defences from the Proposed Development, as detailed in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** secured through requirement 22 of the **Draft DCO** **[PEPD-009]**.
Cowfold Stream and the River Adur			
	RR-090 RR-168 RR-206	Concern over the impact of the Proposed Development on Cowfold Stream and the River Adur.	**Chapter 26: Water environment, Volume 2** of the ES **[APP-067]** considers the potential impact of pollution to the River Adur and Cowfold Stream, resulting from the Proposed Development. The assessment concludes that there is likely to be no significant impact to water quality in the River Adur and Cowfold Stream during the construction or operational phases of the Proposed Development. The assessment also concludes that the impact resulting from changes to watercourse morphology as a result of works on or near watercourses is not expected to be significant. The **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** includes embedded environmental measures which will be implemented at all construction areas to prevent pollution events occurring and limit the impact to nearby receptors, including watercourses. The Contractor(s) will be required to produce and adhere to a Pollution Prevention Plan (PPP) and Pollution Incident Response Plan (PIRP), as per Commitments C-8, C-14, C-72, C-129, C-150, C-151, and C-167 (**Commitments Register** **[APP-254]** (which has been updated at the Deadline 1 submission and are secured through requirement 22 of the **Draft DCO** **[PEPD-009]**).

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Table 6-14 Removal of wind turbine generators

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-020 RR-026 RR-046 RR-057 RR-091 RR-092 RR-154	Questions raised regarding the mechanism for ensuring that the wind turbines generators are removed at the end of their life cycle and their disposal.	The operational lifetime of the Proposed Development is assumed to be around 30 years. A decommissioning plan and programme will be developed prior to construction and updated during operation of Proposed Development to account for any changes to decommissioning best-practice and developments in technology. At the end of the operational lifetime of the Proposed Development, it is anticipated that all structures above the seabed will be completely removed. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment. The decommissioning duration of the offshore infrastructure may take the same amount of time as construction of the Proposed Development, up to four years, although this indicative timing may reduce. The Energy Act (2004) requires that a decommissioning plan be submitted to and approved by the relevant Secretary of State, a draft of which will be submitted prior to the construction of the Proposed Development. The decommissioning plan and programme will be updated during the Proposed Development's lifespan. A description of the onshore and offshore decommissioning of the Proposed Development can be found in Section 4.9 of **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**.

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Table 6-15 SLVIA impacts

PINS ref	Respondent	Summary of relevant representation	Applicant's response
General seascape, landscape and visual impacts			
	RR-004 RR-006 RR-013 RR-019 RR-026 RR-029 RR-030 RR-037 RR-038 RR-046 RR-049 RR-051 RR-052 RR-056 RR-057 RR-063 RR-065 RR-066 RR-068 RR-080 RR-082 RR-088 RR-091 RR-092 RR-096 RR-099 RR-103 RR-106 RR-110 RR-118 RR-124 RR-128 RR-130 RR-136 RR-140 RR-144 RR-153 RR-154 RR-156 RR-171 RR-176 RR-179 RR-181 RR-183	Concern over the overall visual impacts of the Proposed Development including both offshore and onshore elements.	The likely significant seascape, landscape and visual effects of the Proposed Development have been assessed in the Environmental Statement within **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** and **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**. Wherever practicable, likely adverse effects have been avoided or minimised through embedded environmental measures in the design of the Proposed Development, taking into account the findings of the Environmental Statement, consultation with stakeholders and national and local policy requirements. The spatial extent of the Proposed Development array area has been reduced and designed according to a set of SLVIA specific design principles (Section 15.7 of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**) which provide embedded environmental measures by reducing the magnitude of effects and minimising harm on the perceived seascape qualities and views. Opportunities to reduce effects through further design principles specific to West Sussex are limited by the technical, economic, and functional requirements of the Proposed Development to produce renewable energy, as well as other environmental factors. Full details of the embedded environmental measures for visual effects can be found in Section 15.7 of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** and Section 18.7 of **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**. The Applicant has produced and submitted a **SLVIA Maximum Design Scenario and Visual Design Principles Clarification Note** (Document reference: 8.35) at Deadline 1, which provides further commentary on these SLVIA specific design principles. **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** identifies significant seascape, landscape and visual effects for areas of the South Downs National Park (SDNP), West Sussex, East Sussex, and the City of Brighton & Hove. A number of environmental measures are embedded (commitments C-37 (blade tip height), C-40 (offshore substation installation), C-61 (design principles), and C-62 (legal navigational marking and lighting requirements) in table 18-25) as part of the Proposed Development design to avoid, minimise or reduce any significant environmental effects on seascape, landscape and visual receptors, as far as possible and are secured through Requirements 2, 3, and 30 of the **Draft DCO** **[PEPD-009]**). Although there are some significant effects on views and perceived special quality of the Chichester Harbour Area of Outstanding Natural Beauty (CHAONB) designation, no effects are of such magnitude or significant enough, on their own or cumulatively to compromise the statutory purposes of the designation. The likely significant onshore landscape and visual impacts (see **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**) linked to the

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-186 RR-188 RR-189 RR-198 RR-200 RR-209 RR-214 RR-217 RR-225 RR-230 RR-239 RR-240 RR-241 RR-243 RR-252 RR-269 RR-275 RR-282 RR-292 RR-296 RR-309 RR-316 RR-321 RR-322 RR-323 RR-324 RR-326 RR-334 RR-336 RR-337 RR-338 RR-340 RR-343 RR-344 RR-349 RR-351 RR-352 RR-353 RR-354 RR-361 RR-374 RR-377 RR-386 RR-394 RR-399 RR-401 RR-408		Proposed Development are limited to the construction phase, and early in the operational phase, and impacts will be temporary. Embedded environmental measures (commitments C-1 (buried onshore cable), C-33 (outline CoCP), C-9 (joint bays and link boxes), and C-199 (stage specific LEMP) in table 18-25) aim to minimise effects on the special qualities of the SDNP through careful design consideration and planning in respect of the construction process and activity, taking account of relevant policy and guidance and are secured through Schedule 1 and Requirements 12, 22, and 23 of the **Draft DCO [PEPD-009]**). The ES assessment presented in **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** has found some significant effects on the setting of designated assets in the construction phase along the onshore cable corridor. These effects will be temporary. The wider benefits of the Proposed Development and the need for offshore wind energy must be weighed against the adverse effects that have been identified as well as any local issues and concerns. This balancing should also take into account national and international policies and obligations that seek to tackle climate change and achieve net zero carbon emissions in 2050. Section 104 of the Planning Act 2008 outlines that the DCO Application must be decided in accordance with the relevant NPS (in this case: NPS EN-1 (DECC, 2011a), NPS EN-3 (DECC, 2011b) and NPS EN-5 (DECC, 2011c) with NPS EN-1 (DESNZ, 2023a), NPS EN-3 (DESNZ, 2023b) and NPS EN-5 (DESNZ, 2023c), that came into force in 2024, relevant considerations in the decision-making process) unless (inter alia) the adverse impacts of a proposal would outweigh its benefits.

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-409 RR-416 RR-420		
Offshore seascape, landscape and visual impact assessment (SLVIA) effects			
	RR-004 RR-011 RR-019 RR-043 RR-051 RR-065 RR-068 RR-092 RR-106 RR-110 RR-118 RR-124 RR-140 RR-151 RR-172 RR-187 RR-205 RR-209 RR-218 RR-222 RR-223 RR-239 RR-234 RR-269 RR-277 RR-279 RR-282 RR-284 RR-312 RR-319 RR-326 RR-337 RR-341 RR-377 RR-386	Concern over the visual impact of the wind turbine generators on the seascape and on the landscape including lighting and long-distance views from the South Downs National Park..	The seascape and visual impacts of the Proposed Development WTGs are assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** which identifies significant seascape, landscape and visual effects for areas of the South Downs National Park (SDNP), West Sussex, East Sussex, and the City of Brighton & Hove. A number of measures are embedded as part of the Proposed Development design to avoid, minimise or reduce any significant environmental effects on seascape, landscape and visual receptors, as far as possible. The spatial extent of the Proposed Development array area has been reduced and designed according to a set of SLVIA specific design principles (Section 15.7 of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**) which provide embedded environmental measures by reducing the magnitude of effects and minimising harm on the perceived seascape qualities and views, focusing particularly on the SDNP. The Applicant has produced and submitted a **SLVIA Maximum Design Scenario and Visual Design Principles Clarification Note** (Document reference: 8.35) at Deadline 1, which provides further commentary on these SLVIA specific design principles. Although there are some significant effects on views and perceived special quality of the Chichester Harbour Area of Outstanding Natural Beauty (CHAONB) designation, no effects are of such magnitude or significant enough, on their own or cumulatively to compromise the statutory purposes of the designation. **West Sussex Visual Impact** The Applicant notes that significant effects on views experienced by people living, working, and visiting West Sussex have been identified at a number of representative viewpoints along the West Sussex coastline. The spatial extent of the Proposed Development array area has been reduced and designed according to a set of seascape, landscape and visual impact assessment (SLVIA) specific design principles in Section 15.7 of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** which provide embedded environmental measures by reducing the magnitude of effects and minimising harm on the perceived seascape qualities and views, focusing particularly on the SDNP, these embedded environmental measures have been developed iteratively following the first statutory consultation. Opportunities to reduce effects through further design principles specific to West Sussex are limited by the technical, economic and functional requirements of the Proposed Development to produce renewable energy, as well as other environmental factors. The Applicant has produced and submitted a **SLVIA Maximum Design Scenario and Visual Design Principles**

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
			Clarification Note (**Document reference: 8.35**) submitted at Deadline 1, which provides further commentary on these SLVIA specific design principles. **South Downs National Park (SDNP) Visual Impact** Due regard to the statutory purpose of the SDNP has been had through the project design process, which has reduced adverse effects on the 'breathtaking views' and 'stunning, panoramic views to the sea' defined in Special Quality 1. The spatial extent of the Proposed Development array area has been reduced and designed according to a set of SLVIA specific design principles, which are set out in Section 15.7 of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** and the **SLVIA Maximum Design Scenario and Visual Design Principles Clarification Note** (**Document reference: 8.35**) submitted at Deadline 1, which provides further commentary on these SLVIA specific design principles. In summary, the area to the east of Rampion 1 has been avoided with the Proposed Development wind turbine generators (WTGs) array focused to the south and west of Rampion 1 wind farm. These areas are further offshore at greater distance from the Sussex Heritage Coast of the SDNP, while also having a narrow additional lateral spread in the field of view. A clear line of sight between Rampion 1 and 2 arrays also ensures that it appears as a distinct array with less contrast and a degree of balance with Rampion 1. Although some significant effects on views from the SDNP have been identified in the assessment, effects of major significance in EIA terms have been avoided on the Sussex Heritage Coast area of the SDNP. The wider benefits of The Proposed Development and the need for offshore wind energy must be weighed against the adverse impacts that have been identified as well as any local issues and concerns. This balancing should also take into account national and international policies and obligations that seek to tackle climate change and achieve net zero carbon emissions in 2050.
Onshore LVIA effects on the High Weald Area of Outstanding Natural Beauty (AONB)			
RR-346 RR-236		Concern over the landscape and visual effects of the onshore substation at Oakendene, including long distance views from the High Weald AONB.	**Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** considers the potential landscape and visual effects of the Oakendene substation including long distance views from the High Weald AONB. Section 18.9 of **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** provides the assessment of effects on the Oakendene substation. The onshore substation at Oakendene will have a significant effect on the landscape character within which it is located, namely the J3 Cowfold & Shermanbury Farmlands Local Character Area (LCA) and within 100-250m of the surrounding area to the south and southwest throughout the construction, operation and maintenance and decommissioning phases. These effects are tightly contained by the mature vegetation which surrounds the Oakendene substation site. These limited effects are due to the location of the onshore

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
			substation site within a well-established network of mature trees and woodland and the perimeter planting involving native trees as illustrated in the **Appendix D Oakendene onshore substation Indicative Landscape Plan** within the **Design and Access Statement** **[APP-037]**. Although the High Weald AONB is located approximately 550m to the north of the proposed DCO Order Limits along the A272, site survey has revealed that there will be limited intervisibility between the onshore substation and the AONB. No significant effects on landscape character have been identified within the High Weald AONB or along its boundary (see **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**). During the construction phase **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** identifies that there will be a temporary significant effect on the views experienced by people walking on Public Right of Way (PRoW) 1786 and 1788 north of Taintfield Wood and road users travelling past the site on the A272 and Kent Street, viewing through existing mature roadside vegetation. During the operation and maintenance phase, the extent of visual effects will reduce due to the implementation of **Appendix D Oakendene onshore substation Indicative Landscape Plan** within the **Design and Access Statement** **[APP-037]** which will mitigate the views from PRoW, the A272 and Kent Street. By Year 10 (ten years after construction completion) significant visual effects will be limited to views from PRoW 1786 on high ground to the south of the site near Taintfield Wood. No significant visual effects are identified at the decommissioning phase due to the onshore substation site, being surrounded by mature vegetation as a result of both the existing trees and **Appendix D Oakendene onshore substation Indicative Landscape Plan** within the **Design and Access Statement** **[APP-037**], these are secured by requirements 8, 12 and 22 of the **Draft DCO** **[PEPD-009]**. No significant visual effects have been identified in respect of views of visual receptors within the High Weald AONB and there are no significant effects on views that view north towards landmarks within the High Weald AONB that could affect its setting. The following viewpoints (in **Chapter 18: Landscape and visual impact - figures, Volume 3** of the ES **[APP-099]** are located within the High Weald AONB: • Viewpoint SA6: PRoW 1750 north of Aglands; and • Viewpoint M: High Weald Landscape Trail (near Bolney). Neither of these will view the onshore substation due to the intervening distance and vegetation screening and both viewpoints have therefore been omitted from the LVIA. Consequently, there will be no effect on the special qualities, setting and integrity of the High Weald AONB (see **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**).

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Table 6-16 Impacts on businesses and the local economy

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-025 RR-038 RR-043 RR-052 RR-063 RR-065 RR-066 RR-079 RR-088 RR-132 RR-144 RR-152 RR-153 RR-154 RR-161 RR-177 RR-188 RR-199 RR-201 RR-204 RR-209 RR-214 RR-231 RR-236 RR-261 RR-274 RR-295 RR-310 RR-311 RR-315 RR-316 RR-319 RR-322 RR-324 RR-347 RR-362 RR-363 RR-364 RR-371 RR-377 RR-382 RR-387 RR-399 RR-400 RR-408 RR-409	Concern over effects of the Proposed Development on businesses and the local economy.	**Chapter 7: Other marine users, Volume 2** of the ES **[APP-048]** addresses the potential effects of the Proposed Development on recreational boating, sailing, and fishing. It also includes an assessment of effects on diving and water sports (including surfing). The assessments conclude the likely effects from the Proposed Development on these activities is not significant in EIA terms. The assessment within **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** explores the impact on tourism and finds that overall, when all influencing factors are considered, the effect of the Proposed Development on the volume and value of tourism across Sussex is expected to be negligible across employment, gross value added, volume and value of the tourism economy, access to and enjoyment of onshore recreation activity, which is considered not significant in EIA terms. In addition to this, the Applicant has included a number of commitments specifically included to maximise the benefits of all project phases (construction, operation, and decommissioning) on the local economy and the local employment benefits: • C-34 RED will identify opportunities for companies based or operating in the region to access supply chain for the Proposed Development. • C-35 RED will work with local partners and seek to maximise the ability of local people to access employment. To further facilitate these commitments, the Applicant has developed an **Outline Skills and Employment Strategy [PEPD-037]**. The strategy sets out the approach that will be adopted by the Applicant, with the aim of promoting skills and employment opportunities for local economic benefit within the Sussex area. Based on engagement undertaken to date, a key ambition of the Applicant is to focus on providing sustainable careers, rather than just jobs.

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-412 RR-416		

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Table 6-17 Impact on Eastridge Care Home

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-270	Concern over potential noise effects of the Proposed Development on Eastridge Care Home.	Eastridge Manor care home is identified as a specific sensitive receptor for consideration within the Equalities Impact Assessment (EqIA) (**Appendix 28.3: Equalities Impact Assessment, Volume 4** of the ES **[APP-221]**) (it is the residential institution nursing home referred to in paragraph 1.4.2 and shown in Figure 1-1). There is the potential for changes in the daytime and night-time noise environment at Eastridge Manor care home from trenchless crossing location TC-29 where the drilling duration is 2.3 weeks. **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]** assesses the potential noise effects at Eastridge Lodge, which has the same postcode as Eastridge Manor care home and is therefore representative of noise impact at the care home. Noise assessment results in **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]** show that the predicted noise level during the daytime (see Table 21-29) at Eastridge Lodge (receptor ID 'HDD-29N') remain below the threshold noise level which is set to be protective of the environment and health, and the associated magnitude of change reported as "very low" on this basis. During the night-time period at Eastridge Lodge (receptor ID 'HDD-29N'), the predicted noise level (see Table 21-30 of **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]**) exceeds the threshold noise level by just 1 dB, and the associated magnitude of change reported as "low". As per the embedded environmental measures outlined in Table 21-20 (C-26), screening will be applied to block line of sight between noise sensitive receptors and the main noise emitters on the trenchless crossing compound where required to avoid significant noise effects, this is secured through the **Outline Code of Construction Practice** **[PEPD-033]** requirement 22 of the **Draft DCO** **[PEPD-009]**. Following implementation of the insertion losses, and consideration of the pertinent commitments such as C-26 (provision of mufflers and acoustic barriers (or shrouds) where noisy activities are planned) secured via Requirement 22 of the **Draft DCO** **[PEPD-009]** (outlined in Table 21-20), the residual effect is direct, temporary and of Negligible / Minor adverse significance, and is considered not significant in EIA terms. Furthermore, the temporary and transient nature of drilling activities ultimately limits the potential for health and wellbeing effects which to occur would require long-term exposure to changes in the noise environment, even in more sensitive individuals such as elderly residents (including those suffering with dementia). Overall, while it is acknowledged that residents of the care home are more sensitive to changes in the noise environment, for the reasons described above, the trenchless crossing activities would not result in any differential or disproportionate impact on residents. **Chapter 28: Population and human health, Volume 2** of the ES **[APP-069]** and **Appendix 28.1: Human health baseline, Volume 4** of the ES **[APP-219]** assessed the potential impacts for population and human health. The sensitive receptors included within this assessment remain consistent with those identified within the other aspect chapter (such as Noise) and a further exercise was undertaken to identify specific vulnerable receptors. The assessment concluded that the magnitude of impact on human health from potential changes to air quality, noise and vibration exposure, transport nature and flow rate, visual amenity, access to opportunities for physical activity, and socio-economic factors as a result of the Proposed Development is negligible, which is not significant in EIA terms.

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Table 6-18 Lack of consultation

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-005 RR-017 RR-023 RR-025 RR-036 RR-060 RR-064 RR-065 RR-069 RR-072 RR-096 RR-098 RR-101 RR-113 RR-122 RR-126 RR-152 RR-161 RR-168 RR-170 RR-171 RR-180 RR-188 RR-189 RR-204 RR-209 RR-212 RR-213 RR-218 RR-225 RR-231 RR-236 RR-240 RR-252 RR-261 RR-272 RR-285 RR-293 RR-311 RR-312 RR-313 RR-316 RR-317 RR-329 RR-334	A perceived lack of consultation.	The project has been subject of multiple rounds of iterative consultation with local people and environmental authorities. This process, and evidence of regard had to consultation responses, is set out in the **Consultation Report [APP-027]**.

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-335 RR-336 RR-339 RR-346 RR-347 RR-351 RR-352 RR-364 RR-365 RR-366 RR-370 RR-371 RR-373 RR-374 RR-379 RR-383 RR-385 RR-402 RR-405 RR-409		

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Table 6-19 Design and siting of the onshore substation at Oakendene

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-017 RR-064 RR-072 RR-079 RR-098 RR-107 RR-109 RR-113 RR-128 RR-144 RR-152 RR-155 RR-158 RR-161 RR-168 RR-213 RR-231 RR-232 RR-236 RR-252 RR-272 RR-274 RR-277 RR-281 RR-293 RR-297 RR-313 RR-314 RR-316 RR-317 RR-334 RR-347 RR-398 RR-399	Concerns over the design and siting of onshore substation at Oakendene.	**Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** describes the alternatives studied by the Applicant and a comparison of their environmental effects across the project as a whole. This includes the alternatives considered and consulted on prior to the DCO Application. As described in **Chapter 3 Alternatives, Volume 2** of the ES **[APP-044]**, the Proposed Development has been developed through a multi-disciplinary design process including environment, engineering, landowner, and cost considerations. The Applicant has sought to avoid, reduce, or minimise the effects through the design process and also by identifying and securing embedded environmental measures. It is acknowledged that some residual effects remain across the site. The Applicant notes that paragraph 4.4.1 NPS EN-1 (2011), against which the Proposed Development is to be assessed, states there is no "*general requirement to consider alternatives or to establish whether the proposed project represents the best option*". This is reflected in paragraph 4.3.9 of NPS-EN1 (2023), which came into force in January 2024. Some specific policies require consideration of alternatives as set out in the National Policy Statement EN-1 (Department of Energy and Climate Change, 2011a), however these do not apply in relation to the comparison of the substation options. Section 3.6 of **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** provides the information on the onshore substation site selection process. **Section 3.6** describes the site selection process and the reasons for other sites being discounted based on the multi-disciplinary factors identified in the paragraph above. The selection of Oakendene is clearly stated as favourable for engineering, cost, and landowner considerations in paragraphs 3.6.23 to 3.6.25 of **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**. Significant weight was also given to the environmental constraints and related policy in the overall balance of the decision. This Applicant has also developed further embedded environmental measures that have been presented in the application including the design principles in the **Design and Access Statement** **[AS-003]**, **Outline Landscape and Ecology Management Plan** **[APP-232]** and **Outline Operational Drainage Plan** **[APP-223]** secured by requirements 8, 12 and 18 of the **Draft DCO** **[PEPD-009]** respectively. The **Design and Access Statement** **[AS-003]** outlines what the detailed design of the onshore substation at Oakendene and the extension to the existing National Grid Bolney substation shall accord with. The criteria for good design are set out in Section 4.5 of NPS EN-1 (DECC, 2011) and Section 4.7 of NPS EN-1 (DESNZ, 2023a). NPS EN-1 (DECC, 2011) and NPS EN-1 (DESNZ, 2023a) specifically acknowledge that the nature of energy infrastructure means that the extent to which development can contribute to the enhancement of the quality of the area is limited. NPS accordance trackers showing the accordance of the Proposed Development with the 2011 NPSs, extant at the time of the submission DCO Application, and the November 2023 NPSs, which came into force in 2024, will be submitted at Deadline 2.

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Table 6-20 New National Policy Statements

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-013 RR-104 RR-120	Set out the position that the DCO Application not be determined until the new National Policy Statements for Energy have been published.	A suite of new National Policy Statements for Energy was published by the Government in November 2023, and subsequently designated by Parliament in January 2024. Section 1.6 of NPS EN1 ('*Overarching National Policy Statement for Energy'*) sets out a transitional arrangement confirming that for DCO applications accepted for examination before designation of the 2023 amendments '*the 2011 suite of NPSs should have effect in accordance with the terms of those NPS*.' As the Rampion 2 application was accepted for determination in September 2023 [**PD-001**] this means that it is the 2011 suite of NPSs that will have effect rather than the suite of new NPSs. However, the Applicant accepts that the NPSs designated in January 2024 are potentially capable of being important and relevant considerations. To assist the Examination, the Applicant has provided a NPS review document (**Statement on the new National Policy Statements for Energy** Ddocument reference 8.29)) at Deadline 1 to provide a comparison of significant changes between the draft NPSs of March 2023 against the NPS as subsequently designated by Parliament in January 2024. The Applicant will submit a written statement on compliance with the provisions of the policy statements at Deadline 2.

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Table 6-21 Unexploded Ordnance

PINS ref	Respondent	Summary of relevant representation	Applicant's response
Danger from unexploded ordnance			
	RR-095 RR-361	Concern over the disturbance of unexploded ordinance that is all along the south coast, and regularly washed up on the shore.	Paragraph 4.3.18 within **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** outlines that for the offshore elements of the Proposed Development geophysical and geotechnical surveys would be carried out to determine the presence of Unexploded Ordnance (UXO). Paragraph 4.3.21 within **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** describes where UXO are identified the initial process will be to undertake a risk assessment to determine the appropriate action (including avoidance, removal or in situ detonation. A separate marine license would be secured for clearance of UXO.

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Table 6-22 Commercial fishing

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-006 RR-030 RR-052 RR-095 RR-105 RR-129 RR-139 RR-175 RR-269 RR-303 RR-315 RR-337 RR-408 RR-412	Concern over the disruption to fishermen and the loss of fishing grounds.	The impact of the Proposed Development on commercial fisheries is assessed in **Chapter 10: Commercial fisheries, Volume 2** of the ES **[APP-051]**. A desk-based review of literature and existing datasets has been undertaken to establish a baseline of commercial fisheries activity ongoing in the area. This understanding of the baseline has been further informed by consultation with the commercial fisheries industry in the area. Commercial fisheries receptors that have been identified and which are considered within the assessment include the following: potting fleet (i.e. vessels fishing with pots and traps); dredging fleet (i.e. vessels fishing with dredges); netting fleet (i.e. vessels fishing with nets); beam trawl fleet (i.e. vessels fishing with beam trawls); demersal otter trawl fleet (i.e. vessels fishing with demersal trawls); and pelagic trawl fleet (i.e. vessels fishing with pelagic trawls). These fleets are comprised of both UK-registered fishing vessels and fishing vessels from European Member States. The assessment has considered the effects from the construction, operational and decommissioning activities of the Proposed Development including: reduction in access to, or exclusion from established fishing grounds; displacement leading to gear conflict and increased fishing pressure on adjacent grounds; disturbance of commercially important fish and shellfish resources leading to displacement or disruption of fishing activity; increased vessel traffic associated with the Proposed Development within fishing grounds leading to interference with fishing activity; additional steaming to alternative fishing grounds for vessels that would otherwise fish within the Proposed Development area; and physical presence of infrastructure leading to gear snagging. A range of environmental measures are embedded as part of the Proposed Development design to remove or reduce any significant environmental effects on commercial fisheries as far as possible. These are set out in Table 10-12 of **Chapter 10: Commercial fisheries, Volume 2** of the ES **[APP-051]**. Additionally, an **Outline Fisheries Liaison and Co-existence Plan [APP-241]** has been submitted with the DCO Application and is secured in condition 11 (g) of Schedule 11 and 12 of the **Draft DCO [PEPD-009]**. Based on the proposed location of the offshore infrastructure and its subsequent operation, plus the incorporation of appropriate environmental measures, no significant effects have been identified in relation to the potential impact of the Proposed Development on commercial fisheries.

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Table 6-23 Requests for further information

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-195	Langstone Harbour would like to understand more about the requirement for windfarm support vessels both during construction, commissioning and maintenance phases of the Proposed Development.	**Chapter 4: The Proposed Development**, **Volume 2** of the ES [**APP-045**] sets out details of the number of support vessels assumed for the both the construction works and for operations. Impact from the support vessels has been assessed as part of **Chapter 13: Shipping and Navigation**, **Volume 2** of the ES **[APP-054]**. Though the nature of the support needed will determine what type of support vessel is needed, many of the tasks will involve either transferring crew to and from the offshore operational area or completing guarding work to ensure other sea users are safely managed if they are within the vicinity of ongoing works. For crew transfer work a crew transfer vessel (CTV) is typically used through this task can also be performed by larger service operations vessels (SOV). Guard work could be undertaken by a variety of different sized vessels, depending on the task at hand.
	RR-170	The DCO is also incorrect in the categorisation of King's Lane as a 'bridleway and public footpath', as stated above, and as the applicant is well aware as they have been to the area and been in contact with some of the residents it is a private road designed as the ONLY vehicular access to a number of homes on the road	**Applicant Response** The private road known as Kings Lane and Moatfield Lane carries the designation of Bridleway 1730 and footpath 1782, which is the highest level of public access available. As it is not a public road, it has been included within the red line boundary of the project to secure a right of vehicular access to operate and maintain the cables. Kings Lane and Moatfield Lane provide a route to access A-60 which is defined in Table 23-24 within **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]** as an operational access only for the onshore cable route. Paragraphs 23.4.21 and 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** describe the expected operational and maintenance phase activities which includes periodic testing of the cable through attendance by up to three light vehicles such as vans in a day at any one location. Unscheduled maintenance or emergency repair visits for the onshore cable will typically involve a very small number of vehicles, typically light vans. Infrequently, equipment may be required to be replaced, then the use of an occasional HGV may be utilised, depending on the nature of the repair. (Paragraph 23.4.22 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**) Sheet 32 of the **Onshore Works Plan** **[PEPD-005]** also shows that Kings Lane and Moatfield Lane is for operational purposes only. As shown in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** the crossings of Kings Lane and Moatfield Lane by the onshore cable route is identified within Appendix A under reference TRX-1de-32 as being crossed by open cut method. This means that during construction access to properties located along Kings Lane and Moatfield Lane will be temporarily affected. The strategy to maintain private means of access during this period is described in Paragraph 5.7.10 of the **Outline CoCP** **[PEPD-033]**. The following general

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
			principles will apply to the managed or private means of access during the cable route construction: • Any access restrictions or effect on individual properties will be kept to a minimum and the Applicant will work with local stakeholders to develop individual solutions to keep disruptions as low as is reasonably possible. • All crossings of private means of access will be developed to allow emergency access at all times. • Contractors will be required to accommodate reasonable requests for access during the working day by temporary plating of the trench unless a suitable diversion is provided around the works. • The trench will be plated or temporarily backfilled outside of construction working hours where feasible to restore access, unless a suitable diversion is provided around the works. • Any access restrictions or closures will be communicated to all residents and businesses with affected rights of access. • A nominated point of contact on behalf of the applicant will be communicated to all residents and businesses at least three months before the start of construction. A final Code of Construction Practice will be required to be submitted and approved on a staged basis, in accordance with the **Outline CoCP [PEPD-033]**, pursuant to requirement 22.
RR-204		Absolutely no information about how the proposed work on both roads would effect the traffic flow through the village of Cowfold.	A number of sensitive receptors have been identified within Cowfold village centre within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** which include: • The A281 south of Cowfold (Receptor 23); • The A281 / A272 in the centre of Cowfold (Receptor 24); and • The A272 Station Road west of Cowfold village centre (Receptor 25). To limit the impacts on these receptors a number of commitments have been made by the Applicant as detailed within the **Commitments Register [APP-254]** (which has been updated at the Deadline 1 submission) and secured through **Outline CTMP [PEPD-035a]**. This includes: • Commitment C-157: The proposed HGV routing during the construction period to individual accesses will be developed to avoid major settlements of Storrington, Cowfold, Steyning, Wineham, Henfield, Woodmancote and other smaller settlements where possible; and • Commitment C-158: The proposed HGV routing during the construction period to individual accesses will avoid the Air Quality Management Area in Cowfold where possible. These commitments are also reflected in Table 5-1 of the **Outline CTMP [PEPD-035a]** secured through requirement 24 of the **Draft DCO [PEPD-009]** which confirms prescribed local HGV access routes for all sections of the

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
			onshore cable corridor and Table 5-2 which details specific local constraints and proposed management of construction traffic routes. These commitments mean that HGV construction traffic will route along the A27 and A23 to gain access to the A272 east of Cowfold wherever possible, thereby avoiding the village centre. This means that only construction traffic using temporary construction accesses A-52, A-56 and A-57 will need to route through Cowfold village centre. As calculated by using data included in Table 5-3 of the **Outline CTMP [PEPD-035a]**, the impact of this commitment is the removal of up to 21,000 two-way HGV trips (10,500 HGVs) from Cowfold village centre over the construction programme. For robustness within the ES chapter, it has been assumed that approximately 25% of HGV traffic will route through Cowfold from the A24 and A272 east of the village centre when entering or exiting temporary construction accesses/construction compounds at Oakendene, Kent Street or Wineham Lane. This therefore accounts for the potential delivery of material or equipment to / from locations directly west of Cowfold and provides a very robust assessment of impacts within Cowfold.

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Table 6-24 Impacts on local communities

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-004 RR-049 RR-064 RR-109 RR-126 RR-168 RR-206 RR-252 RR-270 RR-281 RR-290 RR-301 RR-315 RR-322 RR-323 RR-324 RR-365 RR-366 RR-386	Concern regarding loss of amenity, impact on quality of life and disruption to local communities.	The Environmental Statement ES includes a series of chapters that address the potential effects for local communities including amenity, quality of life, and disruption. Wherever practicable, likely adverse effects have been avoided or minimised through embedded environmental measures in the design of the Proposed Development, taking into account the findings of the ES, consultation with stakeholders and national and local policy requirements. These are: • **Chapter 7: Other marine users, Volume 2** of the ES **[APP-048]**; • **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**; • **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]**; • **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]**; • **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]**; • **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]**; • **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**; • **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]** and • **Chapter 28: Population and human health, Volume 2** of the ES **[APP-069]**. **Chapter 28: Population and human health, Volume 2** of the ES **[APP-069]** assessed the potential impacts for population and human health. The assessment concluded that the magnitude of impact on human health from potential changes to air quality, noise and vibration exposure, transport nature and flow rate, visual amenity, land contamination, access to opportunities for physical activity, socio-economic factors, and electromagnetic fields as a result of the Proposed Development is negligible, which is not significant in EIA terms. The assessment within **Chapter 7: Other marine users, Volume 2** of the ES **[APP-048]** and **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** considers the impact on other marine users and socio-economics experienced as a result of Rampion 2 and concludes that the Proposed Development will provide positive benefits for the local and national economy (although not significant in EIA terms) whilst there will be negligible impacts on the visitor economy. A number of management plans [**APP-223** to **APP-242**] have been included in the DCO Application such as **the Outline Code of Construction Practice (CoCP)** **[PEPD-033]** and **Outline Public Rights of Way Management Plan (PRoW)** **[APP-230]**, which has been developed alongside the EIA process and provide the details of the proposed embedded environmental measures to manage effects during the construction stage. This includes measures that will be implemented to ensure minimal disruption to the local community, such as

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
			C-22 (working hours), C-32 (crossing schedule), and C-105 (site lighting) secured via requirement 22 and 20 of the **Draft DCO** **[PEPD-009]**. Further to this, Applicant has developed an **Outline Skills and Employment Strategy** **[PEPD-037]** updated at the Pre-Examination Procedural Deadline (16 January 2024) and secured through requirement 33 of the **Draft DCO** **[PEPD-009]**. The strategy sets out the approach that will be adopted by the Applicant, with the aim of promoting skills and employment opportunities for local economic benefit within the Sussex area. Based on engagement undertaken to date, a key ambition of the Applicant is to focus on providing sustainable careers, rather than just jobs. Additionally, Rampion 2 will be a permanent neighbour in the Sussex community and the Applicant intends to develop and implement a community benefits package of proposals. In the second half of 2024, the Applicant will therefore be consulting key stakeholders and local communities on how a community benefit package could best support Sussex communities. The final package may include a range of initiatives to benefit business, education, and residential communities and this outside of the DCO consenting process.

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Table 6-25 Impacts on Public Rights of Way

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-141 RR-273 RR-297 RR-299 RR-308 RR-314 RR-354 RR-358 RR-365 RR-366 RR-370 RR-371 RR-402 RR-409 RR-420	Concern that the Proposed Development will result in negative effects on recreation relating to public rights of way (hiking, cycling, horse riding), including within the South Downs National Park and around Cratemans Farm.	**Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** addresses the potential effects of the Proposed Development on Public Rights of Way (PRoWs). No likely significant effects for onshore recreation activity has been identified from the assessment for the operational and decommissioning phases. During the construction phase of the Proposed Development, construction of the onshore elements will be supported with temporary construction compounds (and trenchless crossing compounds), accesses and temporary construction haul roads. The assessment of the construction of Rampion 2 on onshore recreation is anticipated to have a significant residual effect (i.e., post-embedded environmental measures) on the following receptors (Negligible/minor residual effect (not significant) on all other PRoWs (142no)): • Moderate/major residual effect on PRoW users of 2092 and 2693; and • Minor/moderate residual effect on PRoW users of 2208, 3514, 2211 and 2092. All Public Rights of Way (PRoW) affected during onshore construction works are identified in Section 4.3 within the **Outline Public Rights of Way Management Plan [APP-230].** Table 4-1 within the **Outline Public Rights of Way Management Plan [APP-230]** includes each PRoW impacted by the onshore elements of the Proposed Development, the type of impact and if this impact in temporary or permanent. Paragraph 4.2.5 within the **Outline Public Rights of Way Management Plan [APP-230]** confirms that no PRoW will be permanently affected by the Proposed Development. Section 5 of the **Outline Public Rights of Way Management Plan [APP-230]** outlines the proposed management measures for the impacted PRoWs including (but not limited to): • Temporary closures and diversions; • Managed crossings • Shared routes; • Inspection and maintenance; • Signage management; and • PRoW sequencing. Section 5.2 of the **Outline Public Rights of Way Management Plan [APP-230]** also identifies commitments (C-18, C-32, C-161, C162 and C-202) within the **Commitments Register [APP-254] (**which has been updated at the Deadline 1 submission) which have been incorporated into the management of

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
			PRoWs which are impacted by the onshore elements of the Proposed Development. Details of the proposed PRoW temporary closures and PRoW diversions are provided in the **Access, rights of way and streets plan [APP-012].** The provision of a Public Rights of Way Management Plan to be submitted to and approved by the highway authority in consultation with the relevant planning authority is secured via Requirement 20 in the **Draft DCO [PEPD-009]**. **Landscape and Visual Impacts** The likely significant landscape and visual effects of the Proposed Development include effects on the views and visual amenity experienced by walkers, cyclists and horse riders on the public rights of way network, including the South Downs national park and the area around Cratemans Farm. These have been summarised in the Environmental Statement **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** and assessed in Tables 1-35-37 of **Appendix 18.4 Visual Assessment, Volume** of the ES **[APP-170]**). Wherever practicable, likely adverse effects have been avoided or minimised through embedded environmental measures in the design of the Proposed Development, taking into account the findings of the Environmental Statement, consultation with stakeholders and national and local policy requirements. The likely onshore landscape and visual impacts linked to the Proposed Development are limited to the construction phase and early operational phase and the impacts will be temporary.

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Table 6-26 Impacts on historic environment

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-354 RR-358	Concern that the Proposed Development will affect the cultural and historical heritage of the South Downs	**Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]** addresses the potential onshore historic environment effects of the Proposed Development. No likely significant effects for the South Downs have been identified from the assessment for the operational phase. During the construction phase, likely significant adverse effects have been identified for any previously unrecorded archaeological remains – though none have yet been identified. Commitments C-225 and C-79 in the **Commitments Register** **[APP-254]** (updated at the Deadline 1 submission) provide for mitigation through design and archaeological recording and are secured through Schedule 1, Part 3, Requirement 19 of the **Draft DCO** **[PEPD-009]**: C-225 Where previously unknown archaeological remains of high heritage significance are identified through surveys along the cable route, and where these locations have not been possible to avoid during earlier design stage, consideration will be made for engineering solutions (e.g. narrowing of the construction corridor, divert cable route within DCO Order Limits, re-siting stockpiles) to avoid impacts in the first instance. Where impacts are not avoidable, these will be minimised where possible through design solutions and an appropriate programme of mitigation will be undertaken to ensure preservation by record. Such measures will be reviewed in consultation with relevant stakeholders (WSCC Archaeologist and Historic England). An onshore outline WSI provides detail of appropriate methodologies to be implemented during the evaluation and mitigation stages of the archaeological works (as updated by the Applicant within the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** at the Procedural A Deadline). C-79 Archaeological and paleoenvironmental mitigation will entail an agreed programme of archaeological recording and dissemination to mitigate any significant adverse effects during construction. Provision will be made for appropriate curation/deposition of the site archive. The **Outline Onshore Written Scheme of Investigation (WSI)** **[APP-231]** (which will be updated at Deadline 3 to include the updates to the commitments C-225 and C-79 outlined above) sets out the methodological approach for archaeological investigations which ensures further investigation will be undertaken prior to construction. The **Outline Onshore Written Scheme of Investigation (WSI)** **[APP-231]** also sets out the measures that will be taken in response to the disturbance of archaeological remains resulting from work at onshore construction areas and which cannot be avoid through appropriate design measures. Engagement will be undertaken with relevant stakeholders to provide comment/input to this document which will be updated during the Examination.

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Table 6-27 Impacts on landowners outside of the DCO Order Limits

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-070 RR-113 RR-115 RR-132 RR-293 RR-308 RR-397	Individual landowners claim that their land will be directly affected by the Proposed Development not identified in the **Book of Reference** **[APP-026]**.	All of the landowners directly affected by the Proposed Development (either as landowners, lessees, tenants, those with interests in or power to sell land, or those entitled to make a 'relevant claim' under section 10 of the Compulsory Purchase Act 1965, Part 1 of the Land Compensation Act 1973 or under section 152(3) of the Planning Act 2008) have been identified and are listed in the **Book of Reference** **[APP-026]**. They have been identified through a robust due diligence process outlined in Appendix 3 and 4 of the **Statement of Reasons** **[APP-021]**.

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Table 6-28 Response to Representation by MOMENTUM LIMITED

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-251	We have been fishing the bay between Selsey and Beachy Head since the 1970's (our Managing Director has been fishing here since the 1950's). Our main concerns of Rampion 2 are based on our experience gained from the construction and operation of Rampion 1. The construction phase of Rampion 1 caused much disturbance to the industry. Pushing commercial and domestic vessels out of the area and concentrating them and the fishing fleets' associated fishing gear in the surrounding areas. Leading to increased gear conflict between fishermen and "bad blood". Gear conflict between the fishing industry and the wind farm vessels (construction and maintenance) also occurs/ed. Increasing the wind farm area will only increase this displacement effect; concentration of vessels and gear conflict. The backfilling of the cable trenches of Rampion 1 has resulted in numerous "free roaming" boulders which ruin fishing nets. The locations of naturally occurring, previous existing boulders where always known and could therefore be avoided. Although the industry is gaining knowledge of these "new" boulders they are not static and are therefore unpredictable making areas relatively unfishable. More cable trenches, especially as they are not using existing trenches from Rampion 1, will result in more areas of the bay being unfishable. Again increasing the displacement effect. Before the construction of Rampion 1 we were concerned about the marine species that are native to our Bay. We understand that some have benefited from Rampion 1, however, we also understand that some have not. We have always been concerned with the Brown crab migration being interrupted by effects produced by inter-ray and export cables of Rampion 1, even during the planning stage. Now since Rampion 1 has been constructed we are even more concerned; the local industry is finding that our current Brown Crab population is not behaving as it should be. They do not appear to be feeding properly, are very sleepy in behaviour and are not migrating as they should. The local crabbing industry is dying. The proposed area of Rampion 2 is on the Brown Crab Hen migratory route, over and around Hooe Bank, from the East of the Channel to the West. The Law now states that species migratory channels must be kept clear. Dover soles, another one of our most commercially important species, normally "fat" and full of meat at this time of year (November), are "skinny" and relatively worthless. Again not good for the industry and local jobs. It has been noted over the past couple of years that European Lobsters and Brown Crab appear to be dying in static	*Assessment of access and displacement effects* **Chapter 10: Commercial fisheries, Volume 2, [APP-051]**. assesses the impacts of the construction, operation and maintenance, and decommissioning of the Proposed Development on commercial fisheries. The following impacts on fisheries are assessed, which capture the concerns identified by Monteum Ltd in their representation: • reduction in access to, or exclusion from established fishing grounds; • displacement leading to gear conflict and increased fishing pressure on adjacent grounds; • disturbance of commercially important fish and shellfish resources leading to displacement or disruption of fishing activity; • increased vessel traffic associated with Rampion 2 within fishing grounds leading to interference with fishing activity; • additional steaming to alternative fishing grounds for vessels that would otherwise fish within the Rampion 2 area; and • physical presence of infrastructure leading to gear snagging. The assessment outcomes are not repeated in full in this response, and can be accessed in the ES, but it is noted that in summary, a range of environmental measures are embedded as part of the Proposed Development design to remove or reduce any significant environmental effects on commercial fisheries, as far as possible (as described in Section 10.7 of **Chapter 10: Commercial fisheries, Volume 2, [APP-051]** and in **Outline Fisheries Liaison and Co-existence Plan, [APP-241])**. In general, the impact assessment has not identified Significant effects (in EIA terms) on fishing fleets; an exception to this is the impact of temporary loss of fishing grounds and associated displacement during the construction phase of the Proposed Development for the UK potting fleet, for which a potentially Significant (in EIA terms) effect was identified. It is recognised that in some instances the removal or relocation of static gear may be required during the construction phase. Where this is the case, appropriate mitigation will be implemented for affected fishing vessels following an evidence-based approach, in line with FLOWW guidance, via the establishment of co-operation agreements and associated disruption payments, which will reduce the significance of the effect such that it is considered Not Significant (in EIA terms). Detail on the planned approach to mitigation is provided in the **Outline Fisheries Liaison and Co-existence Plan, [APP-241]** secured through condition 11 (g) Schedule 11 and 12 of the **Draft DCO [PEPD-009])**. During the operational phase of the Proposed Development the assessment assumes that fishing will be possible within the array area where turbine spacing and turbine layout allow productive grounds to be targeted. Minimum turbine spacing is 830 metres for the purposes of the commercial fisheries assessment (Rampion 1 spacing is 750 metres for context). Inter-array cables will be buried under the seabed but where this is not possible, cable protection will be used. Commercial fisheries will only be prevented from actively fishing

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
		gear lobster pots. This is very unusual and several scientific investigations into this have commenced. Whilst the weights of Dover Soles and the deaths of Lobsters and Crab cannot be automatically attributed to Rampion 1, surely the causes of these drastic effects on our marine species should be investigated and resolved prior to any further wind farm construction. With Rampion Wind Farm set to increase in size the effects of the above can only increase. At some point the fishing industry will have to give. Reduced catch, reduced catch quality and increase in gear conflict results in less profits which in turn results in less jobs and a dying industry. The next generation of fishermen, born and bread in local Fishing families, are leaving the industry for the guaranteed money of becoming a Windcat driver for the Wind Farm industry. It is very Hard to compete with the money they offer when fishing is based on what you catch, and that is depleting. Making a dying industry even harder to maintain, but also altering our local community which originated as a fishing town, growing up around the fishing industry.	within the footprint of installed infrastructure within the array area, together with associated safety zones during major maintenance activities (500 metres radius) and assumed safe operating distances. Marine traffic survey data indicate that fishing vessels (presented in **Chapter 13: Shipping and Navigation**, **[APP-054]**), particularly those originating from Shoreham and Newhaven, transit through the existing Rampion 1 project area to fishing grounds. Data also indicates that some vessels actively fish in Rampion 1. Fisheries stakeholder feedback obtained during a fisheries working group meeting indicates that 'in relation to Rampion 1 some fishing activity is ongoing within the array area and whelk gear is stored within Rampion 1. Potting vessels are fishing in the wind farm - fishermen have also seen increased concentrations of mackerel, crabs, lobster, bass and conger eels within the wind farm, and spider crabs were also present possibly due to the [scour] rock protection. The fishing seems to be good with whelks and mussels'. *Effects on commercially important fish and shellfish resources* Concerns regarding changes in the status of local fish and shellfish stocks are noted. Effects on fish and shellfish species are assessed in **Chapter 8: Fish and Shellfish Ecology [APP-049]**; the outcomes of assessment are not presented in full here but in summary no Significant (in EIA terms) effects on fish and shellfish species are identified. Reflecting this, in **Chapter 10: Commercial fisheries, Volume 2, [APP-051]**, disturbance of commercially important fish and shellfish resources leading to displacement or disruption of fishing activity is not considered to be Significant (in EIA terms). Trends in landings of the target species cited by Monteum are shown below for the commercial fisheries study area of ICES rectangle 30E9, based on Marine Management Organisation landings data (as presented in **Chapter 10: Commercial fisheries, Volume 2, [APP-051]**). Rampion 1 construction commenced in February 2016 and completed in April 2018 when the wind farm became operational. Landings of brown crab show a peak in 2016 followed by a trend of gradual decline through to 2022. Landings of lobster show a trend of gradual decline from 2014 to 2022. Landings of sole fluctuate across the time series displayed, peaking in 2014 and being at their lowest in 2020. These landings trends are broadly consistent with those associated with adjacent ICES rectangles 30E8 and 30F0. As observed in the Monteum representation, trends in landings of these species do not indicate any clear correlation with the Rampion 1 construction and operational activity.

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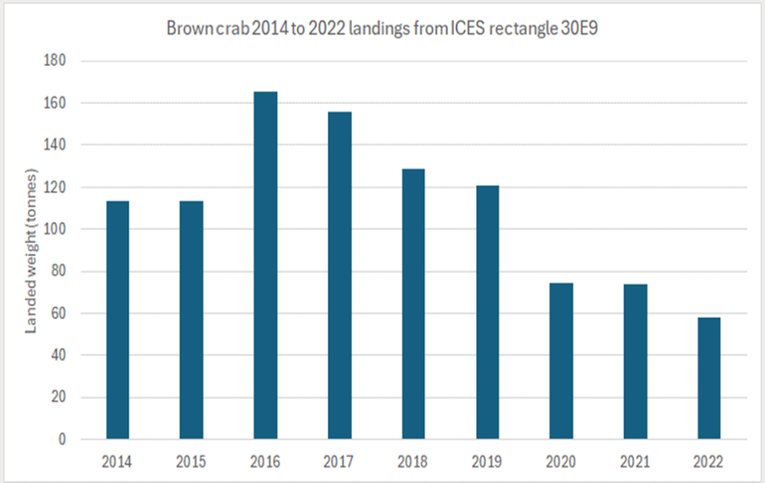
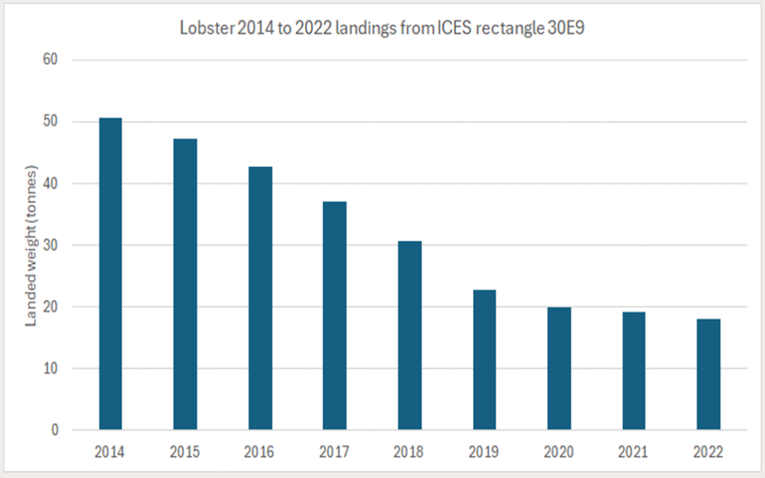
PINS ref	Respondent	Summary of relevant representation	Applicant's response





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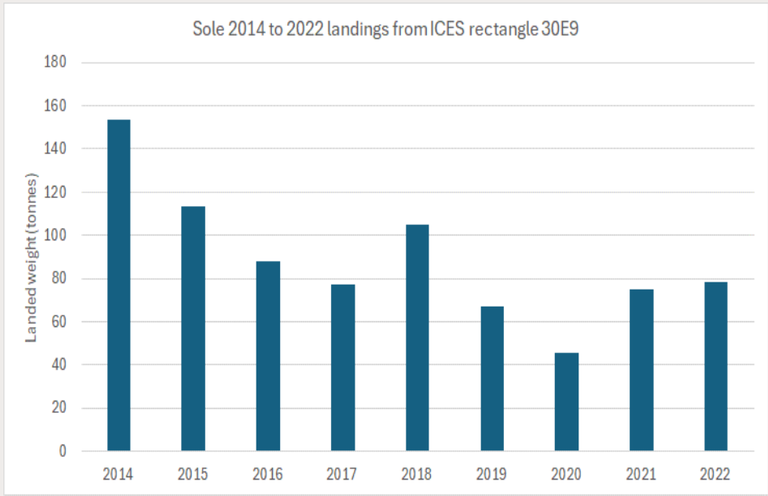
PINS ref	Respondent	Summary of relevant representation	Applicant's response



Fisheries stakeholder engagement
The concerns of fisheries stakeholders, including Monteum Ltd, have been considered in defining the scope of the commercial fisheries impact assessment, and in undertaking the assessment. Engagement with the local fishing industry is summarised in Section 10.3 **Chapter 10: Commercial fisheries, Volume 2, [APP-051]**. This engagement has primarily been undertaken via email communications from the Company Fishing Liaison Officer and meetings with five Fishing Working Groups, three of which already existed for Rampion 1 and two which were created to reflect the change in geographical location of Rampion 2, further west. Monteum are members of the SIFG, have been invited to three meetings to date, and have attended two meetings. Fisheries engagement will continue throughout all phases of the Proposed Development in line with the approach to liaison set out in the **Outline Fisheries Liaison and Co-existence Plan, [APP-241]** secured through condition 11 (g) Schedule 11 and 12 of the **Draft DCO [PEPD-009]**.

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Table 6-29 Response to Representation by Hubbard Fisheries Ltd

PINS ref	Respondent	Summary of relevant representation	Applicant's response
	RR-149	Impact of fisheries in and around the proposed Rampion 2 build site. • Environmental impacts (damage to fish and shellfish stocks etc). • Movement of sediment/aggregate. Increasing the risk of damaging fishing gear and changing the ecosystem • Increased danger to fisherman which added vessels and offshore structures brings. • Loss of earnings.	**Chapter 10: Commercial fisheries, Volume 2, [APP-051]** assesses the impacts of the construction, operation and maintenance, and decommissioning of the Proposed Development on commercial fisheries. The following impacts on fisheries are assessed, which capture the concerns identified by Hubbard Fisheries Ltd in their representation: • reduction in access to, or exclusion from established fishing grounds; • displacement leading to gear conflict and increased fishing pressure on adjacent grounds; • disturbance of commercially important fish and shellfish resources leading to displacement or disruption of fishing activity; • increased vessel traffic associated with Rampion 2 within fishing grounds leading to interference with fishing activity; • additional steaming to alternative fishing grounds for vessels that would otherwise fish within the Rampion 2 area; and • physical presence of infrastructure leading to gear snagging. The assessment outcomes are not repeated in full in this response, and can be accessed in the ES, but it is noted that in summary, a range of environmental measures are embedded as part of the Proposed Development design to remove or reduce any significant environmental effects on commercial fisheries, as far as possible (as described in Section 10.7 of **Chapter 10: Commercial fisheries, Volume 2, [APP-051]** and in the **Outline Fisheries Liaison and Co-existence Plan [APP-241]**. In general, the impact assessment has not identified Significant effects (in EIA terms) on fishing fleets; an exception to this is the impact of temporary loss of fishing grounds and associated displacement during the construction phase of the Proposed Development for the UK potting fleet, for which a potentially Significant (in EIA terms) effect was identified. It is recognised that in some instances the removal or relocation of static gear may be required during the construction phase. Where this is the case, appropriate mitigation will be implemented for affected fishing vessels following an evidence-based approach, in line with FLOWW guidance, via the establishment of co-operation agreements and associated disruption payments, which will reduce the significance of the effect such that it is considered Not Significant (in EIA terms). Detail on the planned approach to mitigation is provided in the **Outline Fisheries Liaison and Co-existence Plan [APP-241]**. The concerns of fisheries stakeholders, including Hubbard Fisheries Ltd, have been considered in defining the scope of the commercial fisheries impact assessment, and in undertaking the assessment. Engagement with the local fishing industry is summarised in Section 10.3 of **Chapter 10: Commercial fisheries, Volume 2 [APP-051]**. This engagement has primarily been undertaken via email communications from the Company Fishing Liaison Officer and meetings with five Fishing Working Groups, three of which already existed for Rampion 1 and two which were created to reflect the change in geographical location of Rampion 2, extending further west. Hubbard Fisheries are members of the SIFG, have been invited to three meetings to date, and attended the meeting in November 2022. Fisheries engagement will continue throughout all phases of the Proposed Development in line with the approach to liaison set out in the **Outline**

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PINS ref	Respondent	Summary of relevant representation	Applicant's response
			Fisheries Liaison and Co-existence Plan, [APP-241] secured through condition 11 (g) Schedule 11 and 12 of the **Draft DCO [PEPD-009]**

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7. Applicant's Response to Relevant Representations: Non-prescribed consultees

Table 7-1 Applicant's Response to The Littlehampton Society

Ref	Relevant representation comment	Applicant's response
NSB-1.1	As a representative of the Committee of The Littlehampton Society, we air our beliefs that this is not a project of Sustainable Development and the consultation was poor for such a large scale project. The adverse impacts of Rampion 2 would outweigh the benefits and Rampion 2 would undermine to the achievement of sustainable development of the south coast including nearshore & inland ecosystems & associated communities. Rampion 2 projects itself as offshore whereas, only 8 miles from shore at the nearest point, it is inshore or nearshore. It is well within the 25mile buffer zone advised for the South Down National Park. It is also not an extension by definition, it is a completely stand alone installation. The noise pollution generated by construction, and the sickening infrasound created by blade thump and gear noise at high levels over extended periods of time, would be highly detrimental to the coastal communities in the area. The consultation was not at all clear, and our membership was very ill-informed about the project. To assist in providing information where (Rampion 2 was lacking by refusing to meet face to face even though restrictions on meeting and gathering were lifted) we coordinated to create a public meeting with experts in fields of acoustics, planning and surveying. Rampion 2 ignored and then declined to attend our invitation. I was contacted by Rampion 2 team members 24hrs before the meeting and asked to join in via Zoom, which we facilited. There are around 4 billion insects crossing the Channel annually for migration, along with them birds and bats. There is no mitigation for turbines in their path, in the zone of height where they fly. As well there is no possible mitigation for the marine life that will be subjected to piling sound of around 180dB - where are these creatures to go? What if they are breeding, spawning, nesting or cannot move away quick enough or have no other options. The kelp beds are regrowing due to a Trawling Byelaw - these would certainly be affected by construction as sedimentation one of the biggest threats to kelp. As well as urchins. Non-native invasive species are a Significant threat according to Rampion 2, and very likely as they come in on the bottoms of the support vessels. If the balance in the delicate ecosystem of the kelp beds is changed, the outcome could be disastrous. The kelp beds are a carbon sink and protect and feed countless marine creatures. All in all, this project is too hefty, too near and too destructive to be suitable for our delicate Sussex Bay and South Downs National Park.	Section 104 of the Planning Act 2008 outlines that the Development Consent Order (DCO) Application must be decided in accordance with the relevant National Policy Statement (NPS) (in this case: NPS EN-1 (Department of Energy and Climate Change (DECC), 2011a), NPS EN-3 (DECC, 2011b) and NPS EN-5 (DECC, 2011c) with NPS EN-1 (Department for Energy Security and Net Zero (DESNZ), 2023a), NPS EN-3 (DESNZ, 2023b) and NPS EN-5 (DESNZ, 2023c), that came into force in 2024, relevant considerations in the decision-making process) unless (inter alia) the adverse impacts of a proposal would outweigh its benefits. Section 5.4 of the **Planning Statement** **[APP-036]** summarises the potential environmental, social and economic benefits and the adverse impacts of the Proposed Development drawing on relevant information in line with NPS EN-1 (DECC, 2011a and DESNZ, 2023a). Section 5.5 of the **Planning Statement** **[APP-036]** sets out the planning balance where the potential benefits and impacts of the Proposed Development are weighed up. Although, inevitably, there are adverse impacts associated with the scale and type of infrastructure that forms the Proposed Development, the Applicant considers that the planning balance is firmly in favour of the Proposed Development and the benefits outweigh the adverse impacts. Paragraph 2.2.28 of NPS EN-1 ((DECC, 2011a), extant at the time of submission of the DCO Application and against which it will be tested, outlines that the NPS takes full account of the objective to contribute to the achievement of sustainable development. Paragraph 2.6.3 of National Policy Statement (NPS) EN-1 ((DESNZ, 2023a) (published in November 2023) which took effect in January 2024, and is a relevant consideration in the decision-making process, also states that the NPS takes full account of the objective to contribute to the achievement of sustainable development (in a similar manner to paragraph 2.2.28 of NPS EN-1 (DECC, 2011a)), whilst paragraph 2.6.5 states that the UK Government believes that the NPSs provide policies that both respect the principle of sustainable development and can facilitate the consenting of energy infrastructure at the scale required. The Applicant considers that the Proposed Development represents sustainable development in accordance with the NPSs outlined above. A NPS review document (**Statement on the new National Policy Statements for Energy** (Document Reference 8.29)) has been submitted at Deadline 1 to provide a comparison of significant changes between the draft NPSs of March 2023 against the NPS as subsequently designated by Parliament in January 2024.

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Ref	Relevant representation comment	Applicant's response
		The environmental effects to the seabed are assessed in **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-049]**, specifically including the area of the proposed export cable corridor which passes through the no-trawling zone. Due to the short-term and localised nature of this impact and the tolerance and recoverability of the majority of the benthic receptors, the significance of the residual effect is deemed Minor Adverse and Not Significant in EIA terms. The environmental effects to fish and shellfish, marine mammals, and migrating birds are assessed in **Chapter 8: Fish and shellfish ecology, Volume 2** of the ES **[APP-049]**, **Chapter 11: Marine mammals, Volume 2** of the ES **[APP-052]** and **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES **[APP-053]** and no significant effects are predicted to occur. **Chapter 22: Terrestrial ecology and nature conservation**, Volume 2 of the ES **[APP-063]** assessed the potential effects of the Proposed Development on invertebrates which included surveying. Key habitats for terrestrial invertebrates are avoided by the onshore cable corridor or are crossed by trenchless crossings, and embedded environmental measures have been included in the DCO Application to minimise, reduce, and avoid potential impacts. Terrestrial invertebrates were scoped out from requiring further assessment due to the lack of pathway of effects and limits potential scale of impact. Further recent reviews of potential ecological effects of offshore wind farms have not identified insect collision as a risk. These include a 2021 study completed on behalf of the IUCN (Bennun et al., 2021) and one published in the journal Nature in 2022 (Galparsoro et al., 2022). The ES assessments undertaken have concluded that no significant effects on marine ecology, terrestrial ecology or ornithology are likely to occur as a result of the Proposed Development alone or with other relevant projects or plans. Similarly, the **Report to Inform Appropriate Assessment** **[APP-038]** concludes that there will be no adverse effect to any of the protected sites assessed. The project has been subject of multiple rounds of iterative consultation with local people and environmental authorities. This process, and evidence of regard had to consultation responses, is set out in the **Consultation Report** **[APP-027]**.

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Table 7-2 Applicant's Response to East Beach Residents Association (EBRA) – Littlehampton (East Beach Residents Association (EBRA) - Littlehampton)

Ref	Relevant representation comment	Applicant's response
NSB2.1	I have registered on behalf of the East Beach Residents Association. Members have a number of concerns over the Rampion 2 Project. It is considered the size of the proposed turbines, much larger than those in the Rampion 1 field, will ruin the seascape both from the seafronts and when viewed from the South Downs. It is a huge change that physically transforms the natural seascape and landscape long enjoyed by many residents and visitors for its historic and host of intrinsic values and well-being effects. ? The government suggests such large turbines should be at least 25 miles offshore, not close inshore as in this case and setting to avoid local harm.	If consented, the Applicant will be placing turbine orders a decade after Rampion 1, with turbines not being installed until 2027 or 2028 at the earliest. Technology has significantly advanced since Rampion 1, so a sensible projection has been made using intelligence from turbine manufacturers of what the available turbine technology is likely to be several years from now. This avoids the risk of consenting a technology that might no longer be available in the marketplace, while ensuring the turbines offer the best solution to tackle climate change and the best value to the consumer. The seascape and visual impacts of the Proposed Development WTGs are assessed in **Chapter 15: Seascape, landscape and visual impact, Volume 2** of the ES **[APP-056]**. The Applicant notes that significant effects on views experienced by people living, working, and visiting West Sussex have been identified at a number of representative viewpoints along the West Sussex coastline. The spatial extent of the Proposed Development array area has been reduced and designed according to a set of SLVIA specific design principles (Section 15.7 of **Chapter 15: Seascape, landscape and visual impact, Volume 2** of the ES **[APP-056]**) which provide embedded environmental measures by reducing the magnitude of effects and minimising harm on the perceived seascape qualities and views, focusing particularly on the SDNP. Opportunities to reduce effects through further design principles specific to West Sussex are limited by the technical, economic and functional requirements of the Project to produce renewable energy, as well as other environmental factors. The Applicant has produced and submitted a **Seascape, Landscape and Visual Design Principles Clarification Note** at Deadline 1, which provides further commentary on these SLVIA specific design principles. In relation to the comment regarding a Government suggestion on distance recommendations, there have been three versions of the Offshore Energy Strategic Environmental Assessment (OESEA), since 2009. None have proposed any form of exclusion zone for nearshore wind farms such as Rampion or Rampion 2. Furthermore, the Government was clear, in its responses after consultation on OESEA3, that it did not intend to even imply a notional exclusion zone.
NSB2.2	Building the Wind Farm will cause considerable environmental damage to the Sussex seabed which is only now slow recovering from years of bottom trawling. Kelp farms are beginning to re-establish themselves. All this progress will be put back years. ? There is risk of adverse impacts on migrating birds and the cross-channel migration of flying insets estimated to be 3 trillion annually (thus impacting pollination services and food productivity on both side of the channel). This issue is only coming to light in German studies.	The environmental effects to the seabed are assessed in **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-049]**, specifically including the area of the proposed export cable corridor which passes through the no-trawling zone. Due to the short-term and localised nature of this impact and the tolerance and recoverability of the majority of the benthic receptors, the significance of the residual effect is deemed Minor Adverse and Not Significant in EIA terms. Whilst Marine Net Gain is not currently mandated in the same way as onshore (terrestrial) biodiversity net gain, in recognition of the principles set out in the NPS EN-1 (DESNZ, 2023a) that came into force in 2024, the Applicant is currently exploring opportunities to partner with organisations who are able to deliver marine benefits in the region.

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Ref	Relevant representation comment	Applicant's response
		The environmental effects to migrating seabirds are assessed in **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES **[APP-053]**, and no significant effects are predicted to occur. **Chapter 22: Terrestrial ecology and nature conservation**, Volume 2 of the ES **[APP-063]** assessed the potential effects of the Proposed Development on invertebrates which included surveying. Key habitats for terrestrial invertebrates are avoided by the onshore cable corridor or are crossed by trenchless crossings, and embedded environmental measures have been included in the DCO Application to minimise, reduce, and avoid potential impacts. Terrestrial invertebrates were scoped out from requiring further assessment due to the lack of pathway of effects and limits potential scale of impact. Further recent reviews of potential ecological effects of offshore wind farms have not identified insect collision as a risk. These include a 2021 study completed on behalf of the IUCN (Bennun et al., 2021, see **Appendix 28**) and one published in the journal Nature in 2022 (Galparsoro et al., 2022). The ES assessments undertaken have concluded that no significant effects on marine ecology, terrestrial ecology or ornithology are likely to occur as a result of the Proposed Development alone or with other relevant projects or plans. Similarly, the **Report to Inform Appropriate Assessment [APP-038]** concludes that there will be no adverse effect to any of the protected sites assessed.
NSB2.3	Members consider the economic case for this inshore wind farm is very poor. The present Rampion 1 field has an efficiency rating of some 37-38% on an average annual basis. This is not the windiest coast in our Isles and better regimes are further offshore The cost of the Rampion installation in the region of £3 to 4 billion in current market conditions. Inefficient allocation of money puts upward pressure on electricity tariffs. Through our future electricity bills we will all have to pay for this new wind farm. It means we will be paying for a system that is only a little over 1/3 productive, whereas if this money was spent on a wind farm in the North Sea offer an efficiency rating of closer 55%-60% on an annual average or other low emission sources available by 2030 (when Rampion 2 would be commissioned) that offer better value for money. Why should consumers pay for a less efficient system?	National Policy Statement (NPS) EN-1 (DECC, 2011a), extant at the time of submission of the DCO Application and against which it will be tested, outlines that there is an urgent need for new renewable electricity projects. The Proposed Development type (offshore wind) is recognised as being a critical national priority (CNP) in NPS EN-1 and NPS EN-3 (DESNZ, 2023a; 2023b), which came into force in January 2024, for which there is an urgent need to deliver. The Proposed Development will contribute towards meeting the urgent need for new energy infrastructure in the UK, provide enhanced energy security, support the economic priorities of the UK Government and, critically, make an important contribution to decarbonisation of the UK economy. Wind turbines are extremely efficient and generate electricity around 85% of the time. The wind resource is free, there is no extraction or transportation of fuel, no burning of fuel or wasted heat energy. The developer for Rampion 2, RWE, has over 20 years of experience in constructing and operating offshore wind farms, and has determined that Rampion 2 is a viable site and productive location for wind energy generation, with a predicted wind speed of ~9.3 m/s. The latest figures show that the operating Rampion Wind Farm exceeded target generation[1] by 15% in 2023. Rampion has exceeded its target for three of the four complete years of operation from 2020-23 and in terms of total generation across this period, Rampion has exceeded the target by 8%[2].

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Ref	Relevant representation comment	Applicant's response
		It is not only the wind resource that makes Rampion 2 an ideal location for an offshore wind farm. With the southeast of England being one of the most densely populated regions in Europe, it's a huge demand centre for electricity. Rampion 2 can therefore create a greater contribution to electricity generation close to where the demand centre is located, which reduces transmission losses and requires no electricity storage facilities. 1. Target generation is 1,367GWh per year. Assumed capacity factors for offshore wind, The Contracts for Difference (Standard Terms) Regulations August 2014, DECC. Generation: 400MW x 0.39 x 8760 x 1,000 = 1,366,560,000KWh / 1,367GWh pa) 2. Total target for 2020 – 2023 = 5,468GWh (4 x 1,367GWh). Total actual generation for 2020 – 2023 = 5,919GWh (2020 = 1,600GWh, 2021 = 1,363GWh, 2022 = 1,376, 2023 = 1,580GWh.
NSB2.4	The East Beach Residents Association fully supports the views of Protect Coastal Sussex (PCS) and are happy that they represent our views in future discussions. In this regard we further propose that: Sustainable development may be considered a Principal Issue in the Rampion 2 Windfarm Examination in the context of being a relevant policy lens and organising framework for the Examination to better weigh whether: (1.) The adverse impacts of Rampion 2 outweigh the benefits, and (2.) Rampion 2 would undermine, rather than support the achievement of sustainable development of south coast inshore waters and affected coastal and inland communities. The sustainable development framework offers the Examination Authority (ExA) and Interested Parties (IPs) a tangible, less subjective way of understanding, discussing and arriving at judgements about the Application most important to people. That is in the context of considering the local impact reports offered by statutory consultees and comment by other Interested Parties in relevant and written representations. It enables looking at the balance across the 3-pillars of sustainable development (social, economic, and environment dimensions) from construction, through operation and decommissioning stages, thus considering how Rampion 2 impacts current and future residents and the visitor economy. Specific Policy Relevance Determining whether the adverse impacts outweigh the benefits is cited in Advisory Notes issued by the Planning Inspectorate as a principal role of the Examination Authority and for the Panel to take into account when recommending whether, or not, to consent an application.	Paragraph 2.2.28 of NPS EN-1 (DECC, 2011a), extant at the time of submission of the DCO Application and against which it will be tested, outlines that the NPS takes full account of the objective to contribute to the achievement of sustainable development. Paragraph 2.6.3 of NPS EN-1 (DESNZ, 2023a) (published in November 2023) which took effect in January 2024, and is a relevant consideration in the decision-making process, also states that the NPS takes full account of the objective to contribute to the achievement of sustainable development (in a similar manner to paragraph 2.2.28 of NPS EN-1 (DECC, 2011a)), whilst paragraph 2.6.5 states that the UK Government believes that the NPSs provide policies that both respect the principle of sustainable development and can facilitate the consenting of energy infrastructure at the scale required. The Applicant considers that the Proposed Development represents sustainable development in accordance with the NPSs outlined above. A NPS review document (**Statement on the new National Policy Statements for Energy** (document reference 8.29)) has been submitted at Deadline 1 to provide a comparison of significant changes between the draft NPSs of March 2023 against the NPS as subsequently designated by Parliament in January 2024. The range of assessments presented in **Chapter 6: Coastal processes, Volume 2 [APP-047]** to **Chapter 29: Climate change, Volume 2 [APP-070]** of the Environmental Statement (ES) demonstrate how the Applicant has taken into account how the Proposed Development would affect social, economic and environmental well-being. The Applicant considers that the Proposed Development represents sustainable development. Section 5.4 of the **Planning Statement [APP-036]** summarises the potential environmental, social and economic benefits and the adverse impacts of the Proposed Development drawing on relevant information in line with NPS EN-1 (DECC, 2011a and DESNZ, 2023a). Section 5.5 of the **Planning Statement [APP-036]** sets out the planning balance where the potential benefits and impacts of the Proposed Development are weighed up. Although, inevitably, there are adverse

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Ref	Relevant representation comment	Applicant's response
	The overarching principle of sustainable development itself is legally embedded at all levels of UK policy and planning from regional and international conventions and agreements, through national policy statements, down to the neighbourhood plan and local community levels. The National Planning Policy Framework (2023, update) under Part 2 "Achieving Sustainable Development", states: ? "The purpose of the planning system is to contribute to the achievement of sustainable development" (para 7) ? "So that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development." (paras, 10 and 11), not just any development. The NPPF (2023) also offers a workable definition where, "the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives); namely the social, economic and environmental objectives. Many representations submitted for the Rampion 2 Examination will undoubtedly address adverse impacts, cumulative impacts and issues that can be readily categorised under the three pillars. The National Policy Statements (Energy) (NPS, 2011 - in effect) and (NPS, 2023 - proposed) state that: "The NPS provide the primary basis for Planning Inspectorate (PINS) assessment of an application and its recommendation on whether the Secretary of State (or the delegated Minister) should grant or withhold development consent. (Extract from NPS EN-1, 2011) ? EN-1 (2011) Section 2.2.4 states…. It is important that, in doing this, the planning system ensures that development consent decisions take account of the views of affected communities and respect the principles of sustainable development. And under, "Delivering Government's wider objectives" ? Section 2.2.27 states" … The Government's wider objectives for energy infrastructure include contributing to sustainable development and ensuring that our energy infrastructure is safe. Sustainable development is relevant not just in terms of addressing climate change, but because the way energy infrastructure is deployed affects the well-being of society and the economy…" Practical relevance for efficiency of the Rampion 2 Examination We ask that sustainable development framework and principle, in the context noted above, be considered a Principal Issue in the Rampion 2 Examination (i.e. to help discuss, hear argument and take evidence) to better inform judgements on whether: (1) the combined adverse impacts of Rampion 2 outweigh the benefits; and (2) Rampion 2 would undermine, rather than contribute to the achievement of sustainable development of the south coast inshore and affected coastal and inland communities. Further we ask those specific questions be the subject of topic-specific hearings, however best organised. A suitable venue would be the Millennium Chamber of the Littlehampton Town Hall if the permission of Littlehampton Town Council is requested and given.	impacts associated with the scale and type of infrastructure that forms the Proposed Development, the Applicant considers that the planning balance is firmly in favour of the Proposed Development and the benefits outweigh the adverse impacts. A NPS review document (**Statement on the new National Policy Statements for Energy** (document reference 8.29)) has been submitted at Deadline 1 to provide a comparison of significant changes between the draft NPSs of March 2023 against the NPS as subsequently designated by Parliament in January 2024. The project has been subject of multiple rounds of iterative consultation with local people and environmental authorities. This process, and evidence of regard had to consultation responses, is set out in the **Consultation Report** **[APP-027]**. The Applicant notes that the Examining Authority identified Brighton as the location for the Preliminary Meeting (PM), Open Floor Hearing (OFH) and Issue Specific Hearings (ISH) as outlined in the Rule 6 Letter. The PM and ISH 1 were undertaken in February 2024.

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Table 7-3 Applicant's Response to Member of Protect Coastal Sussex (Member of Protect Coastal Sussex)

Ref	Relevant representation comment	Applicant's response
NSB-3.1	Generally, when proposing a development, The National Planning Policy Framework (NPPF)(Ministry of Housing, Communities and Local and Local Government, 2019) Section 127 sets out the design considerations helping decision-making for developments and indicates that developments: A)Will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development. B) Are visually attractive as a result of good architecture, layout and appropriate and effective landscaping. C)Are sympathetic to local character and history, …. D)Establish or maintain a strong sense of place, using arrangements of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit. E) Optimise the potential of the site to accommodate and sustain an appropriate amount and mix of development (including green and other public space) and support local facilities and transport networks. F) Create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users; where crime and disorder, and the fear of crime, do not undermine the quality of life or community cohesion and resilience. NONE of the above criteria applies to the proposed development!	Section 104 of the Planning Act 2008 outlines that the DCO Application must be decided in accordance with the relevant NPS (in this case: NPS EN-1 (Department of Energy and Climate Change, DECC, 2011a), NPS EN-3 (DECC, 2011b) and NPS EN-5 (DECC, 2011c) with NPS EN-1 (DESNZ, 2023a), NPS EN-3 (DESNZ, 2023b) and NPS EN-5 (DESNZ, 2023c), that came into force in 2024, relevant considerations in the decision-making process) unless (inter alia) the adverse impacts of a proposal would outweigh its benefits. The criteria for good design are set out in Section 4.5 of NPS EN-1 (DECC, 2011) and Section 4.7 of NPS EN-1 (DESNZ, 2023a). NPS EN-1 (DECC, 2011) and NPS EN-1 (DESNZ, 2023a) specifically acknowledge that the nature of energy infrastructure means that the extent to which development can contribute to the enhancement of the quality of the area is limited. A NPS review document (**Statement on the new National Policy Statements for Energy** (document reference 8.29)) has been submitted at Deadline 1 to provide a comparison of significant changes between the draft NPSs of March 2023 against the NPS as subsequently designated by Parliament in January 2024. **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** details how the design of the Proposed Development has evolved and demonstrates that all aspects of site selection, site access and future access requirements have been incorporated into the design of the Proposed Development to minimise and mitigate adverse impacts. Engagement and consultation undertaken for the Proposed Development have informed the assessment work and the evolution of the design of Rampion 2. **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** includes a description of environmental measures that have been incorporated into the design of the Proposed Development. The **Design and Access Statement** **[AS-003]** outlines what the detailed design of the onshore substation at Oakendene 2km east of Cowfold and the extension to the existing National Grid Bolney substation shall accord with, as per Requirements 8 and 9 of the **Draft DCO** **[PEPD-009]**.
NSB3.2	In their document, Rampion 2 Wind Farm Category 6: Environmental Statement Volume 2, Chapter 21: Noise and vibration: August 2023 Revision A: ……. sound levels in the area are likely to be influenced by Road and rail traffic and additional sources such as gardening activities, conversation and music closer to areas of habitation, as well as the sea on approaching the coast. The largest settlement in the Study Area is Littlehampton. Sound levels here are principally likely to be influenced by local road traffic and rail traffic as well as other sources of human activity. ACTUALLY: Littlehampton is NOT affected by A259, except the northern boundary. The southern and coastal part of the settlement is NOT affected by transport and there is no	The description of the existing baseline is presented in Section 21.6 within **Chapter 21: Noise and vibration** of the ES **[PEPD-018]** which has been informed by baseline sound level survey measurements which are detailed in **Appendix 21.1: Baseline sound report, Volume 4** of the ES **[PEPD-025]**. Section 21.6 within **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]** provides a description of the existing baseline to accompany the collection of baseline sound levels measurements, before the project sound (construction and operation) is assessed against the existing baseline. Section 21.15 in **Chapter 21: Noise and vibration, Volume 2** of the ES **[APP-062]** concluded that the potential effect during the construction phase and operation and maintenance phase will be

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Ref	Relevant representation comment	Applicant's response
	disturbance from the rail traffic due to the frequency of trains and the position of the railway station. Gardening activities, conversation and music are activities generally associated with enjoyment. The sea approaching the coast is a natural/pleasant sound which is INCOMPARABLE with the technical and industrial noise produced as an outcome of construction, running the WTG and all substations, accommodation of cables and maintenance.	negligible to minor adverse following the implementation of embedded environmental measures, which is not significant in terms of EIA.
NSB3.3	The 'core' working hours are set to be 0700 - 1900 Monday to Friday and 0800 - 1300 on Saturdays. During this time there will be at least 12 months of hammering pin-pile foundations. Support vessels, 60 return trips -assuming per turbine. Transport vessels 6 - assuming per turbine Transport vessels return trips 60 Crew Transfer Vessels - maximum number of vessels 6 Crew Transfer vessels - maximum number of return trips 500 2 Helicopters Maximum number of return trips 500 The greatest number of vessels operating within the array will lead to the greatest potential for seabed interaction. The greatest number of vessels operating within the array will lead to the greatest potential for seabed interactions AND POLLUTION. Duration: 6 months.	Working hours are stated in Section 4 of **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** and are outlined in Section 4.4 of the **Outline Code of Construction Practice (CoCP) [PEPD-033]**. Following receipt of Relevant Representations and information shared at Issue Specific Hearing 1, C-22 within the **Commitments Register [APP-254]** has been updated at the Deadline 1 submission to the following: '*Core working hours for construction of the onshore components will be 08:00 to 18:00 Monday to Friday, and 08:00 to 13:00 on Saturdays, apart from specific circumstances that are set out in the Outline COCP, where extended and continuous periods of construction are required.* *Prior to and following the core working hours Monday to Friday, a 'shoulder hour' for mobilisation and shut down will be applied (07:00 to 08:00 and 18:00 to 19:00). The activities permitted during the shoulder hours include staff arrivals and departures, briefings and toolbox talks, deliveries to site and unloading, and activities including site and safety inspections and plant maintenance. Such activities shall not include use of heavy plant or activity resulting in impacts, ground breaking or earthworks.'* This has been updated in the **Outline Construction Traffic Management Plan [PEPD-035a]** for the Deadline 1 submission and will be updated in the **Outline Code of Construction Practice [PEPD-033]** for the next submission of this document. As outlined in the **Outline Code of Construction Practice (CoCP) [PEPD-033]**, no activity outside these hours (including Sundays, public holidays, or bank holidays) will take place apart from under the following circumstances: • Where continuous periods (up to 24 hours, 7 days per week) of construction work are required for HDD (as HDD is a continuous activity that cannot be paused once started); • for other works requiring extended working hours such as concrete pouring which will require the relevant planning authority to be notified at least 72 hours in advance; • or the delivery of abnormal loads to the connection works, which may cause congestion on the local road network, and will require the relevant highway authority to be notified at least 72 hours in advance; or • as otherwise agreed in writing with the relevant planning authority.

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Ref	Relevant representation comment	Applicant's response
		Any out of work hours beyond those listed above will be detailed by a Section 61 application of the Control of Pollution Act 1974 with agreement sought by the relevant Local Planning Authority. Commitment C-263 includes the production of a Noise and Vibration Management Plan (NVMP) during detailed design based on the principles in the **Outline CoCP** **[PEPD-033]**, which is secured by Requirement 22 of the **Draft DCO** **[PEPD-009]**. Offshore piling has been assessed in Paragraph 21.9.75 of **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]** which states "*The worst-case noise level predicted at the nearest onshore noise sensitive receptor to the offshore piling is 34 dB. This level is below the BS 5228-1 (BSI, 2014) thresholds representative of a Very Low magnitude of change for all time periods*". As such, the piling noise may be audible, but will not be significant. The environmental effects to the seabed, including the effects from vessel movements during construction, are assessed in **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-049].** No significant effects are predicted to occur.
NSB3.4	"The total frontal area is higher (!!) using larger WTG. That makes it even worse. The large ones at the front too close anyway !! Operational lifetime: around 30 years Helicopter total trips per year: 120 Jack-up WTG visits per year 10 Jack-up platform visits per year 9 Jack-up total trips per year 19 Crew vessels WTG visits per year :850 Most scheduled maintenance is expected April to September (OUR Busy SEASIDE SUMMER TIMES!) So NOISE NOISE NOISE! If it isn't the piling it's the helicopters, or the sound of the ginormous turbine blades. Far too close to the beach where sunbathing, swimming, surf boarding, kayaking, sandcastle competitions and ice creams are enjoyed - to our seaside promenades with the little train and joggers jogging, children scooting, dogs walked, the infirm pushed, beach huts are enjoyed and so many people visit to enjoy the sea scape and the sound of the sea. Far too close to our homes, bought often for their sea views, for the tranquility of being beside the sea with the fresh air and beautiful natural sunrises sunsets.	Operational noise from the windfarm has been considered in **Appendix 21.3: Preliminary operational noise predictions, Volume 4** of the Environmental Statement (ES) **[APP-178]** and no significant onshore effects are predicted. Offshore piling has been assessed in Paragraph 21.9.75 of **Chapter 21: Noise and vibration, Volume 2** of the ES **[APP-062]** which states "*The worst-case noise level predicted at the nearest onshore noise sensitive receptor to the offshore piling is 34 dB. This level is below the BS 5228-1 (BSI, 2014) thresholds representative of a Very Low magnitude of change for all time periods*". As such, the piling noise may be audible, but will not be significant. With respect to operation and maintenance Table 21-12 within **Chapter 21: Noise and Vibration, Volume 2** of the ES **[PEPD-018]** outlines those activities or impacts agreed with the Planning Inspectorate to scoped out of the assessment which includes: • Increases in noise from site traffic for substation and wind farm maintenance: operational road traffic will be minimal and will only have a negligible effect on existing road traffic flows, leading to no likely significant effect. • Noise effects as a result of the offshore substation: noise would not be audible as a result of the sound attenuation from the large distance between the offshore substations and onshore receptors, leading to no likely significant effect. • Vibration effects from the operation of the onshore and offshore substations and offshore WTGs: All operational components of the Proposed Development are

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Ref	Relevant representation comment	Applicant's response
		at a sufficient distance that resulting vibration at sensitive receptors would not be perceptible, leading to no likely significant effect.
NSB3.5	The impact on health and the quality of life from noise is not even mentioned in the proposal. Imagine, this horizon suddenly invaded by 90 structures the size of the Eiffel Tower, with flashing lights! Noise is a major environmental health problem and, in contrast to many other environmental problems, noise pollution is growing. Roda(1957) and Staples(1996) as cited by Atkinson(2007) believe that noise has been shown to have significant deleterious physiological and psychological effects, such as stress, high blood pressure, deafness and tinnitus. The Scoping Report has scoped out noise and vibration disturbance during decommissioning works on the basis that " the effects of decommissioning will be lower than those experienced during construction" So, after 35 years of suffering (constructions included) we would've expected to suffer again - only not quite as much!! And how do they plan to assess this noise? "The degree and extent to which residential sensitive receptors (within 20m or 10m may be exposed to unsatisfactory levels of noise needing careful evaluation, particularly in consideration of any evening or night-time working, where evening/ night-time working is continuous with day-time working and where noise screening has been evaluated as impractical for the works" WHY INDOOR NOISE ONLY? DURING SUMMER PEOPLE SPENDTIME OUTSIDE AND OFTEN, WHEN INSIDE THEY HAVE THEIR WINDOWS OPEN. RWE also state that the "Noise disturbance is minimised and managed proactively" What on earth does that mean?? and HOW would it be managed in practice? I could go on… PLEASE DO NOT allow this horror to invade our tranquillity.	Noise and vibration effects of the Proposed Development are assessed within **Chapter 21: Noise and vibration, Volume 2** of the Environmental Statement (ES) **[PEPD-018]** and the potential health effects from changes in noise exposure considered in **Chapter 28: Population and human health, Volume 2** of the ES **[APP-069].** The Applicant acknowledges the potential health impacts associated with noise, however in this instance, the distance between the noise source and closest onshore receptor is such that it is unlikely to result in any change to the onshore noise environment. As a result, the consideration of health effects from operational noise associated with the turbines themselves have been scoped out (Table 28-10 within **Chapter 28: Population and human health, Volume 2** of the Environmental Statement (ES) **[APP-069]**). Section 4.9 within **Chapter 4: The proposed development, Volume 2** of the ES **[APP-045]** outlines the proposals for decommissioning both for offshore and onshore infrastructure. For both onshore and onshore decommissioning, it is envisaged that the decommissioning sequence will generally be the reverse of construction. The assessment of noise effects for the decommissioning phase of the onshore substation is provided in Section 21.11 within **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018].** Paragraph 21.11.2 within **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]** states that the majority of the onshore substation decommissioning activities will be similar to those during construction therefore concluding Not Significant in EIA terms. Commitments C-22 (core working hours), C-26 (implementation of noise mitigation for noisy activities) and C-33 (adoption of the **Outline Code of Construction Practice (CoCP) [PEPD-033]**) secured via Requirement 22 of the **Draft DCO [PEPD-009]** (**Commitments Register [APP-254]** (updated for the Deadline 1 submission) will be implemented to minimise the disturbance to noise sensitive receptors. No assessment has been undertaken for the decommissioning of onshore cable route as it is anticipated that the onshore electrical cables will be left in situ with ends cut, sealed and buried to minimise environmental effects associated with removal.

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Table 7-4 Applicant's Response to CPRE Sussex

Ref	Relevant representation comment	Applicant's response
NSB4.1	Rampion 2 Registration Comments CPRE Sussex is part of the CPRE network. It has about 2,000 members, volunteers, and supporters. CPRE Sussex sees the need for sustainable renewable energy sources that will help reduce greenhouse gas emissions and thus prevent the impacts of climate change. However, proposals that would bring forward such energy sources need to be demonstrably sustainable to the communities that will be permanently affected by the infrastructure associated with them. Sadly, and with an intense sense of disappointment (as it would not have been difficult to do better on several aspects of the proposal) we find we object to this proposal for these reasons: We note that the update on the PINS website dated Oct 23 states that some landowners/managers affected by the proposals have not been correctly notified of them. We feel this important failure is an exact illustration of the approach the company or companies involved in this proposal have taken to it. Affected communities have not been notified and consulted in a balanced and effective way and in line with best practice expected of organisations that are, in effect, public bodies for the purposes of the work set out in the proposal. Good quality, timely and transparent consultation is a key aspect of the DCO process. Thus, CPRE Sussex suggest that the consultation process should be stopped and restarted to ensure all affected communities have a clear opportunity to see detailed plans (not just indicative ones) and discuss more substantive plans and environmental assessments that take full account of the impacts on the environment and communities and detail how such impacts will be avoided and ameliorated. It has proved extremely difficult to communicate with the proposers of Rampion 2 about these matters and we feel this runs contrary to the legal requirements that they have under environmental information regulations. The onshore works for Rampion 2 appear to be needlessly destructive and disruptive to Sussex's countryside. The works as proposed will do permanent damage to the landscape and biodiversity of Sussex and appear more extensive than were envisaged for Rampion 1 at a similar stage.	The project has been subject of multiple rounds of iterative consultation with local people and environmental authorities (through statutory and non-statutory consultation as detailed in Section 5.9 of **Chapter 5: Approach to the EIA, Volumes 2** of the ES **[APP-046]**). This process, and evidence of regard had to consultation responses, is set out in the **Consultation Report** **[APP-027]**. During each consultation, the Applicant's consultation materials included a combination of both simplified plans to enable consultees to review draft proposals in relation to their geographical area of interest, while also providing more technical and detailed **Onshore Work Plans** **[APP-009]**. During each consultation, the Applicant's environmental information provided a full account of the impacts of draft proposals on the environment and communities, and outlined mitigation proposals. This was set out in the consultation materials for each consultation, as follows: • Statutory Project-Wide Consultation, July-September 2021 as set out in the Preliminary Environmental Information Report (PEIR) (Rampion Extension Development, 2021). • Reopened Statutory Project-Wide Consultation, February – April 2022 as set out in the PEIR (RED, 2021). • Statutory Onshore Consultation, October – November 2022 as set out in the PEIR Supplementary Information Report (SIR) (RED, 2022). • Targeted Onshore Consultation, February – March 2023 as set out in the PEIR Further Supplementary Information Report (FSIR) (RED, 2023). The cables need to make landfall at Climping Beach where there is a brief gap in the coastal urban strip, with an onshore cable route required to reach the final connection point into Bolney NG Substation in accordance with the National Grid Connection Agreement. The 40m cable corridor has been assessed to ensure it can accommodate four separate circuits, required to transmit power from the Proposed Development. The onshore cable infrastructure will be buried underground, and the impact is temporary, during construction only, with full reinstatement being monitored and managed for ten years. The construction will be managed in accordance with the Code of Construction Practice, Landscape & Ecology Management Plan, Project Environment Management Plan and Construction Method Statement.
NSB4.2	The proposals appear to favour convenience of engineering over the respect for the environment that would deliver a more sustainable and less damaging outcome. The proposal to station major infrastructure works at Oakendene adjacent to the established settlement of Cowfold has been made without any effective communication with the residents of that settlement or surrounding ones. This failure to consult properly is against best consultation practice and is likely to lead to an unsustainable outcome especially as the impacts on the	The proposed substation site is 1km from the village of Cowfold, Horsham District. As set out in the **Consultation Report** **[APP-026]**, the numerous rounds of statutory and non-statutory consultation included notices, advertisements and leaflets around the proposed cable route, including the village of Cowfold. Additionally, the Applicant attended a public Q&A session organised by the Parish Council in November 2022,

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Ref	Relevant representation comment	Applicant's response
	environment have not been (i) assessed as well as necessary or (ii) accounted for local knowledge. The resultant shortfall in essential information matters greatly because how these developments will impact on the historic village of Cowfold and its community, and the locality's character, ambience, biodiversity and ecology and the adequacy or otherwise of proposed indicative mitigation ought to be major considerations for decision taking. Many of the proposals seem to be indicative in nature and lack the detail necessary to make an examination of the proposals practicable. For example, the ground investigation required prior to construction, to determine whether the site of the proposed onshore substation at Oakendene is suitable for the proposed use and that risks from land contamination have been properly managed, has yet to be undertaken, and apparently won't be undertaken until after the completion of the DCO process.	and hosted a public information event in June 2023. Issues pertaining to Cowfold are drawn together from page 35 of the **Consultation Report** **[APP-026]**. Assessment of the risks from land contamination are presented in **Appendix 24.1: Phase 1 geo-environmental desk study, Volume 4** of the Environmental Statement (ES) **[APP-198]** which has been undertaken in line with the Environment Agency's guidance on Land Contamination and Risk Management (LCRM). The proposed onshore substation at Oakendene will be subject to further contamination assessment through ground investigation, post-DCO consent, and appropriate remediation will be implemented, if required, in line with LCRM. This is secured through Requirement 25 of the **draft DCO** **[PEPD-009]**.
NSB4.3	Likewise the site of the proposed National Grid Bolney Substation (Rampion 2 Wind Farm Category 5: Reports Design and Access Statement Date: August 2023 Revision A. Document Reference: 5.8 Pursuant to: APFP Regulation 5 (2) (q) Ecodoc number: 004866017-01, paragraphs 3.9.1 to 3.9.3). We are concerned that the proposal to land cabling at Climping Foreshore has been prepared without due regard to the implications of increasing coastal erosion and flooding in this area nor with due regard to the SSSI between Climping Foreshore and the mouth of the river at Littlehampton. Substantial erosion and flooding are commonplace and needs to be accounted for as this may worsen under climate change. CPRE Sussex are supportive of the comments of the Sussex Wildlife Trust in respect of Rampion 2 and believe a number of public bodies hold not dissimilar views to our own on various aspects of these proposals. Evidence for comments includes: - Climate Change Committee (2020) The Sixth Carbon Budget - The UK's path to Net Zero - Climate Change Committee (2020) Policies for the Sixth Carbon Budget and Net Zero - The ES to the proposal itself and various drawings within the proposal - Correspondence with the company (no reply received) and others - The Gunning Principles (set out in 1985 by Mr Stephen Sedley QC) - Concern on coastal erosion and flooding expressed in letters and reports involving the Climate Change Committee and other bodies such as the National Infrastructure Commission.	Assessment of risks and impacts seaward of Mean High Water Spring (MHWS) are covered in the offshore assessment(s), and specifically **Chapter 6: Coastal Processes, Volume 2** of the Environmental Statement (ES) **[APP-047]** in which coastal processes, including the future coastal erosion / alignment, were considered in more detail. The onshore assessment (**Chapter 26: Water Environment, Volume 2** of the ES **[APP-067]**) covered the onshore elements of the Proposed Development landward of MHWS and considered tidal flood risk. As noted in **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** the landfall transition joint bay will also be resilient to flooding once constructed. The landfall options were also located as part of a sequential approach at the most optimal locations in relation to the peak sea levels sourced from the Environment Agency's Coastal Design Sea Levels Database and Lower Arun tidal modelling results. The Applicant will undertake Ground Investigation at the landfall site at the post DCO Application to inform the final decision about which landfall option is selected and the detailed design of the transition joint bay and associated apparatus. This is set out in commitment C-247 and secured via Requirement 26 of the **draft DCO** **[PEPD-009]**. Landfall options (TC-01 and TC-01a) were sited topographically on the highest ground in the areas of the least flood risk (Flood Zone 1)) as shown on Figure 26.2.3a of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**. The landfall locations were sited on the land with the lowest hazard ratings for both the present day and future (2070) 0.5% Annual Exceedance Probability (AEP) events, taking into account future climate change projections. There is a suite of suitable embedded environmental measures in Table 8-1 within **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** which have been put in place to minimise any potential residual risk from tidal flooding to and from the proposed works. The key ones include: • C-43 commits to the export cables being drilled underneath the beach using HDD techniques to help maintain the integrity of the sea defence.

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Ref	Relevant representation comment	Applicant's response
		This is secured through Draft Development Consent Order, Schedule 12, Part 2, Requirement 2 (8). • C-17 ensures that the statutory authorities permitting and consenting regimes will be adhered to, e.g. Flood Risk Activity Permitting for temporary activities in close proximity to the Environment Agency flood defence. This will be secured via compliance with the Environmental Permitting (England and Wales) Regulations 2016. • C-247 ensures that the Applicant will undertake Ground Investigation at the landfall site at the post DCO application which will be carried out to inform the exact siting and detailed design of the transition joint bay and associated apparatus. This is secured via DCO Requirement 26 of the **draft DCO** **[PEPD-009]** which states that: "*No works comprising Work Nos. 6 or 7 are to commence until a coastal erosion and future beach profile estimation assessment has been carried out and a scheme identifying any mitigation or adaptive management measures required to help minimise the vulnerability of this part of the Order land from future coastal erosion and tidal flooding (if required) has been submitted to and approved in writing by the Environment Agency.*" • C-118 commits to an Emergency Response Plan for flood events, which will help effectively protect site personnel and equipment from any risk of flooding from the sea during construction. The Emergency Response Plan is secured via the Draft Development Consent Order, Schedule 1, Part 3, Requirement 22 Code of construction practice (5) (j). The Environment Agency geomorphological studies (2020a; 2020b) assessed the likelihood of different coastal evolution scenarios across the coastal frontage. These geomorphological studies were reproduced in Figure 6.1.9 of **Appendix 6.1: Coastal processes technical report: Baseline description, Volume 4** of the ES **[APP-129]**. The Environment Agency geomorphological reports were used as a basis to assess the future risk of coastal change to the onshore development (being considered in an onshore coastal change vulnerability assessment). The risk related specifically to the potential exposure of the landfall cables and associated joint bay due to further coastal erosion. Whilst there is noted uncertainty with regards to the anticipated future coastlines presented, a sequential approach has been considered to locate the landfall transitional joint bay on the landward side of the most extreme of these estimates. In a meeting held with the Environment Agency in March 2023, they noted that that short-term changes associated with recent storms are unlikely to have consequences to the validity of the future estimated coastlines at the landfall location. **Chapter 6: Coastal processes, Volume 2** of the ES **[APP-047]** concludes that construction and operation and maintenance activities will not significantly impact coastal morphology and offshore sediment transport and therefore the development will not increase the risk of coastal flooding and erosion. On the basis of the assessment undertaken within **Chapter 6: Coastal processes, Volume 2** of the ES **[APP-047]** and the measures outlined above the coastal vulnerability of the Proposed

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		Development is considered to be low, for which further mitigation will be identified and implemented post-granting of DCO consent as necessary. **Chapter 22: Terrestrial Ecology and Nature Conservation, Volume 2** of the ES **[APP-063]** assesses the potential effects on the Climping Beach SSSI and its cited features; namely its shingle vegetation, semi-fixed dune community, fixed dune community and non-breeding population of sanderling. No works will take place within the offshore environment closer than 60m from the SSSI boundary and construction works onshore will be at least 200m from it. Only pedestrian access would be required to Climping Beach SSSI to monitor the path of the drill head, using hand-held equipment (see commitment C-112 in the **Commitments Register** **[APP-254]** within the **Outline CoCP** **[PEPD-009]**) secured via Requirement 22 of the **Draft DCO** **[PEPD-009]**. There are a range of commitments that allow for the control of indirect effects from the land fall such as commitment C-76 (implementation of pollution prevention plans) to control risks of loss of pollutants (including dust) and C-217 (restriction of winter working) to prevent disturbance of sanderling (see **Commitments Register** **[APP-254]**). Only should there be a frac out (drilling fluid finding a pathway to the surface) would any sign of works in the SSSI be expected. **Chapter 22: Terrestrial ecology and nature Conservation, Volume 2** of the ES **[APP-063]** paragraphs 22.9.41 to 22.9.46 consider the risk and the measures in place to manage the risk. The assessment is based on information provided in the **Outline Construction Method Statement** **[APP-255]** and the **Outline Code of Construction Practice** **[PEPD-033]** secured via Requirement 22 and 23 of the **Draft Development DCO** **[PEPD-009]**. Although this does not remove the risk, it does demonstrate how the detailed design process and the implementation of risk control measures are expected to be effective.

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Table 7-5 Applicant's Response to Protectcoastalsussex.org

Ref	Relevant representation comment	Applicant's response
NSB5.1	Relevant to EN-1,Section 1.1.4, [REDACTED] (PCS) will offer argument and evidence that the local impacts of Rampion 2 would result in "adverse impacts from the development outweigh benefits" . It is considered that the Applicant was dismissive of many concerns raised by Statutory Bodies and Communities during the consultation period, and which were reported to PINS thereafter in the subsequent AoC submissions	Section 104 of the Planning Act 2008 outlines that the DCO Application must be decided in accordance with the relevant NPS (in this case: NPS EN-1 (Department of Energy and Climate Change, DECC, 2011a), NPS EN-3 (DECC, 2011b) and NPS EN-5 (DECC, 2011c) with NPS EN-1 (DESNZ, 2023a), NPS EN-3 (DESNZ, 2023b) and NPS EN-5 (DESNZ, 2023c), that came into force in 2024, relevant considerations in the decision-making process) unless (inter alia) the adverse impacts of a proposal would outweigh its benefits. A NPS review document (**Statement on the new National Policy Statements for Energy** (document reference 8.29)) has been submitted at Deadline 1 to provide a comparison of significant changes between the draft NPSs of March 2023 against the NPS as subsequently designated by Parliament in January 2024. Section 5.4 of the **Planning Statement** **[APP-036]** summarises the potential environmental, social and economic benefits and the adverse impacts of the Proposed Development drawing on relevant information in line with NPS EN-1 (DESNZ, 2023a). Section 5.5 of the **Planning Statement** **[APP-036]** sets out the planning balance where the potential benefits and impacts of the Proposed Development are weighed up. Although, inevitably, there are adverse impacts associated with the scale and type of infrastructure that forms the Proposed Development, the Applicant considers that the planning balance is firmly in favour of the Proposed Development and the benefits outweigh the adverse impacts. The project has been subject of multiple rounds of iterative consultation with local people and environmental authorities (through statutory and non-statutory consultation as detailed in Section 5.9 of **Chapter 5: Approach to the EIA, Volumes 2** of the ES **[APP-046]**). This process, and evidence of regard had to consultation responses, is set out in the **Consultation Report** **[APP-027]**. During each consultation, the Applicant's consultation materials included a combination of both simplified plans to enable consultees to review draft proposals in relation to their geographical area of interest, while also providing more technical and detailed **Onshore Work Plans** **[APP-009]**. During each consultation, the Applicant's environmental information provided a full account of the impacts of draft proposals on the environment and communities, and outlined mitigation proposals. This was set out in the consultation materials for each consultation, as follows: • Statutory Project-Wide Consultation, July-September 2021 as set out in the Preliminary Environmental Information Report (PEIR) (Rampion Extension Development, 2021). • Reopened Statutory Project-Wide Consultation, February – April 2022 as set out in the PEIR (RED, 2021).

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Ref	Relevant representation comment	Applicant's response
		• Statutory Onshore Consultation, October – November 2022 as set out in the PEIR Supplementary Information Report (SIR) (RED, 2022). • Targeted Onshore Consultation, February – March 2023 as set out in the PEIR Further Supplementary Information Report (FSIR) (RED, 2023).
NSB5.2	An overarching objective of the UK Planning System (NPPF and EN-1,section 2.6.1 through 2.6.4) is for the achievement of sustainable development and PCS will provide argument that this will not be the case with Rampion 2 Following the protocol and structure for Local Impact Reports as per Advice Note one in the National Infrastructure Planning guide,, PCS is undertaking the preparation of a Local Impact Report (LIR) by our members , all of whom live in West Sussex . This will offer well researched evidence based views on the local impacts and their significance in the eyes of many residents and community organisations who would be obliged to essentially "host" the project. This will: Ensure a local based impact analysis will balance what the Applicant and external consultants engaged by Councils may see and attempt to portray as views shared by the population at large.	Paragraph 2.2.28 of NPS EN-1 ((DECC, 2011a), extant at the time of submission of the DCO Application and against which it will be tested, outlines that the NPS takes full account of the objective to contribute to the achievement of sustainable development. Paragraph 2.6.3 of NPS EN-1 ((DESNZ, 2023a) (published in November 2023) which took effect in January 2024, and is a relevant consideration in the decision-making process, also states that the NPS takes full account of the objective to contribute to the achievement of sustainable development (in a similar manner to paragraph 2.2.28 of NPS EN-1 (DECC, 2011a)), whilst paragraph 2.6.5 states that the UK Government believes that the NPSs provide policies that both respect the principle of sustainable development and can facilitate the consenting of energy infrastructure at the scale required. The Applicant considers that the Proposed Development represents sustainable development in accordance with the NPSs outlined above. Section 5.5 of the **Planning Statement** **[APP-036]** sets out the planning balance where the potential benefits and impacts of the Proposed Development are weighed up. Although, inevitably, there are adverse impacts associated with the scale and type of infrastructure that forms the Proposed Development, the Applicant considers that the planning balance is firmly in favour of the Proposed Development and the benefits outweigh the adverse impacts. The range of environmental assessments in **Chapter 6: Coastal processes [APP-047]** to **Chapter 29: Climate change [APP-070], Volume 2** of the ES demonstrate how the Applicant has taken into account how the Proposed Development would affect social, economic and environmental well-being. The Applicant considers that the Proposed Development represents sustainable development.
NBS5.3	Argue with evidence that the socio-economic and environmental impacts have been significantly understated in the application.	Section 5.4 of the **Planning Statement** **[APP-036]** summarises the potential environmental, social and economic benefits and the adverse impacts of the Proposed Development drawing on relevant information outlined in **Chapter 6: Coastal processes, Volume 2** **[APP-047]** to **Chapter 29: Climate change, Volume 2** **[APP-070]** of the Environmental Statement (ES) in line with NPS EN-1 (DECC, 2011a), extant at the time of submission of the DCO Application and against which it will be tested. The Applicant considers that the social, economic and environmental impacts have been appropriately outlined in the ES and are not understated. This has included identifying significant effects on certain receptors.
NBS5.4	Challenge selected impact assessment methodologies in the Application showing that many are dated, flawed and lead to misleading analysis and assertions The main registration comment and request therefore is that serious consideration of local evidence-based perspectives of the adverse impacts of	The Applicant has no further comments on this matter at this time.

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Ref	Relevant representation comment	Applicant's response
	Rampion 2 should be taken forward as Principal Issues in the examination, along with topic specific hearings. PCS (representatives/spokepersons) would like to attend the Preliminary Meeting to speak on this matter and to subsequently attend and make an oral presentation at topic specific Hearings convened to consider local impacts.	
NBS5.5	If possible, PCS would prefer any local Impacts to be held in Littlehampton or Bognor Regis to allow attendance by IPs in those areas. PCS will make its LIR broadly available in the preliminary and final version to District and County Councils to be taken into account in the preparation of their own LIRs, as this task will probably be subcontracted to outside consultants possibly based outside the County. Additionally, PCS will share its LIR work with the representatives of Parish and Town Councils on the Applicant's Community Liaison Groups as most of the interaction with the Applicant was virtual and therefore limited, especially on the offshore components of the proposed project.	The Applicant has no further comments on this matter at this time however the Applicant notes that the Examining Authority identified Brighton as the location for the Preliminary Meeting (PM), Open Floor Hearing (OFH) and Issue Specific Hearings as outlined in the Rule 6 Letter that took place in February 2024.

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Table 7-6 Applicant's Response to Middleton on Sea Coastal Alliance

Ref	Relevant representation comment	Applicant's response
NSB6.1	I have Registered on behalf of Middleton on Sea Coastal Alliance (MOSCA). We have a significant Visual Adequacy Consultation and right to information concern over the Rampion 2 Project: There has been a basic, and vital, deficiency of real-life animation or static representations depicting Rampion 2, made available to residents, businesses and the wider public to offer an accurate 'real life' indication of what the array could look like from particularly the coast. This has been requested by the Parish Council, by MOSCA and residents from the start of the first Consultation process. Building applications by law must provide drawings and back up illustrations for, particularly, large projects. After lengthy delays these requests and reminders for visual aids have been ignored then disregarded without proper explanation. This procedure has been disingenuous and not least disrespectful to those who should have been fully consulted and could have to live with the construction now and in the future. We therefore, request the Examination Panel notes the significant importance of the lack of any authentic visual information or aids to residents and the wider community during both Consultations and to fully respect that residents' rights have not been fully represented to enable them to have an accurate view of the array planned for the horizon of the Sussex Bay and therefore to have been able to fully engage with an 'open information' project.	Photomontage visualisations depicting the predicted views of the Proposed Development are provided in **Figure 15.26** to **Figure 15.79**, **Volume 3** of the ES **[APP-091 to APP-095]** from a range of 54 representative viewpoints along the West Sussex coastline and wider area. These provide an accurate 'real life' indication of the appearance of the Proposed Development in photographic views, including from the coast and wider landscape. They have been produced in accordance with relevant standards for visualisations of development proposals, published by the Landscape Institute. These photomontage visualisations were made available for public viewing during the first Statutory Consultation in July to September 2021. The Applicant undertook a range of Statutory and non-statutory consultations including both in-person events and online consultations in which it engaged with the wider public as set out in the **Consultation Report** **[APP-027]**. The statutory and non-statutory consultations included visualisations of the Proposed Development, in order to allow the public to understand its appearance and visual impacts from the initial early design and throughout the design evolution. The consultation procedure undertaken by the Applicant for Rampion 2 has met the requirements for consultation that are specified in the Planning Act 2008 as confirmed by the acceptance of the DCO Application. Further information on the consultation undertaken by the Applicant can be found in the **Consultation Report** **[APP-027]**.
NSB6.2	We also request: 1. The ExA should invite the Applicant to provide adequate static representations and visual animations. 2. Failing that, the ExA should be open to consideration of animations to scale already available and demonstrably credible. (See link below to PCS requested to be included with this comment) 3. Further that these animations should be considered in combination with written and oral evidence on the applicability of the OESEA strategic advice on visual buffers the opportunity for IP discussion in a topic-specific hearing where the full application of the OESEA advice to Rampion 2 is a Principal Issue. 4. Examine why the Applicant has not taken into account the visual buffer guidance for installing turbines of this scale in the government's OESEA advice on visual buffers, as required in the National Policy Statements (EN-3). That should take evidence on why the OESEA should be interpreted and fully applied in the Rampion case. 5. The ExA should invite and allow local views in that topic specific hearing to examine why the Applicant has not considered the visual buffer guidance for installing turbines of this scale in the government's OESEA advice on visual buffers, as required in the National Policy Statements (EN-3). That should take evidence on why the OESEA should be interpreted and fully applied in the Rampion case. The Rampion 1 Array sight line from Middleton on Sea, is currently visible to the left of Littlehampton. We understand there would be a minor 'shipping gap' or corridor to ease access for Littlehampton Harbour between the existing Rampion 1 turbine array and the start of the far larger Rampion 2 array of about 2.2km as it spreads westward to Selsey. Unfortunately, the benefit of this gap	1 & 2. Photomontages in relation to seascape, landscape and visual impact assessment were provided in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** in line with best practice guidance (The Guidelines for Landscape and Visual Impact Assessment), as detailed in response NSB6.1. 3. & 4. High level 'buffer' studies do not ultimately replace the need for site specific assessment, which has been undertaken in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**, of which the findings have informed the design of the Proposed Development and the embedded environmental measures, as described in Section 15.7 of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**.

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Ref	Relevant representation comment	Applicant's response
	as a visual break will only be enjoyed along a small length of coastline cantered around Goring by Sea. Two thirds of the proposed new turbines would be placed to the west of the gap, the remainder would be to the east – to the south of the existing Rampion 1 Array. From nearly all viewpoints along the coast, and particularly from the Bognor Regis/Selsey end of the bay it would not be possible to discern there is a gap as the two areas of new turbines and the original Rampion 1 Array would merge into a chaotic cluster extending across most of the field of view.	
NSB6.3	Consequently, the turbine grouping will impact the sea horizon view in daylight – at a stand or spinning – together with the use of flashing red navigation lights particularly at night – there will be no part of the horizon that is not adversely affected by the grouping. This is a major visual life change for the natural seascape and character of landscape and coastal communities and views from the South Downs National Park for generations to come and would change exponentially the cultural and mental health benefits of coastal life and visiting the area. There is nothing natural in this construction of 'utility machinery' and it has and is concerning that the Developer has, effectively hidden the proposal in illustrative terms, from public view. With no 'official' project visual animation available from the Developer to illustrate the proposed array nor real life indication of the 325m height and bulk of the turbines – it appears that Rampion 2 will significantly and adversely 'fence in' the entirety of the sea horizon* As the disturbing exchange of letters between the Planning Inspectorate and the Applicant on Section 51 Advice so clearly indicates There has been no clarity on Turbine height or number which makes the understanding all the more difficult – either up to 116 turbines (WTGs) up to 240m tall or up to 75 turbines (WTGs) up to 325m tall. Or 90 wind turbines up to 325m tall. The latter two being 2 ½ times taller, more visible and far more intrusive and transformative. The latter larger turbines should be at least 25 miles offshore, not close inshore as in this case we understand is normal Government policy.	The seascape and visual effects of the Proposed Development wind turbine generators (WTGs) are assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**. The Applicant notes that significant effects on views experienced by people living, working, and visiting West Sussex have been identified at a number of representative viewpoints along the West Sussex coastline and from within the South Downs National Park. The Applicant has produced and submitted a **Seascape, Landscape and Visual MDS Clarification Note** (Document reference:: 8.24.1) (at Examination Deadline 1), which provides further justification that the maximum design scenario (MDS), with a balance of WTG numbers between the Zone 6 and western Extension Area, is representative of the worst case in terms of seascape, landscape and visual effects. The assessment of aviation and navigation night-time lighting is undertaken within **Appendix 15.5: Assessment of aviation and navigation night-time lighting, Volume 4** of the ES **[APP-161]** and this assessment includes consideration of effects of night-time lighting on the urban areas outside the South Downs International Dark Sky Reserve (IDSR). The Applicant does, however, acknowledge the ES omission of night-time visualisations and assessment of night-time effects from the agreed viewpoints in West Sussex outside the IDSR. The Applicant has therefore provided a Supporting Study **Appendix 15.6: Supplementary Night-Time Viewpoint Assessment, Volume 4** [**PEPD-024]** (submitted at the Pre examination Procedural Deadline on 16 January 2024). This provides a further assessment of the visual effects of night-time aviation and marine navigation lighting from the agreed viewpoints at Worthing (Viewpoint 10) and Pagham (Viewpoint 13) outside the IDSR, which is supported with night-time photomontage visualisations from these locations. No night-time significant effects are predicted to occur at Viewpoint 10 or Viewpoint 13. The EIA submitted in the Environmental Statement for Rampion 2 is based on parameters for the Rampion 2 development. As Wind Turbine Generator (WTG) technology is continually evolving, it is difficult to definitively predict the generating capacity and size of WTG that will be commercially available at the point of procurement for construction. As such, the size and capacity of the WTGs for the Proposed Development will be determined during the final design stage prior to construction. The final turbine design will be selected in accordance with the parameters set out in the DCO. The maximum design scenario for the WTG is described in **Chapter 4: The Proposed Development, Volumes 2** of the ES **[APP-045]**. The Applicant is seeking

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Ref	Relevant representation comment	Applicant's response
		consent using a 'Rochdale envelope' approach, constrained by worst case parameters. These are described in Section 4.5 of **Chapter 4: The Proposed Development, Volume 2** **[APP-045]**. Following a request from the Examining Authority (ExA), the Applicant provided a summary table setting out the maximum design scenario used for each assessment, see **Examining Authority requested additional information** **[PEPD-041]**. At Procedural Deadline A, the Applicant committed to utilising one size of WTG throughout the Proposed Development, and this has been incorporated into the **draft Development Consent Order** **[PEPD-009]** (see Schedule 1 – Authorised Project Part 3 Requirements 2.(2)(d)).
NSB6.4	The Planning Act (2008) says the adverse impacts offshore wind proposals will be evaluated on the basis of the worst case. As in Pins Advisory Note 9: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-nine-rochdale-envelope/ Other concerns relating to the proposal are also visual but have environment and mental health consequences for this area: § Building the overall size of the proposed Rampion 2 will cause considerable environmental damage to the Sussex seabed which is only now slowly recovering from years of bottom trawling.	**Chapter 5: Approach to the EIA**, **Volume 2** of the ES **[APP-046]** states that where the design is still evolving, a precautionary approach has been applied to ensure a maximum design scenario which represents the worst-case scenario for each aspect is assessed in the ES. This approach has been adopted in line with the Planning Inspectorate Advice Note Nine: Rochdale Envelope (Planning Inspectorate, 2018), and is further described in **Chapter 4: Proposed Development**, **Volume 2** of the ES [**APP-045**] in paragraphs 4.1.4 to 4.1.6. The maximum design scenario is defined by parameters that are secured in the **draft DCO** [**PEPD-009**] and submission documents. At Procedural Deadline A, a summary of where these parameters are to be secured was provided **Examining Authority request additional information** [**PEPD-041**]. Each individual aspect chapter in the **Environmental Statement, Chapter 6: Coastal processes to 29: Climate change**, of the ES [**APP-047** to **APP-070**], provides commentary on the appropriate reasonable maximum design scenario adopted for the individual assessments, this is presented in the 'Basis for ES assessment' section in each chapter. The environmental effects to the seabed have been assessed in **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-50]** which concludes that no significant effects are predicted to occur.
NSB6.5	Kelp farms are beginning to re-establish themselves. All this progress will be put back years. Adverse impacts on migrating birds and the cross-channel migration of flying insects estimated to be 3+ trillion a year (a major impact on pollination services on both side of the channel); It will, both in the construction and future operation create a disturbing number of carcasses and injured creatures washing up along a coastline not least an uninterrupted view of what has to be called an industrial view – which has fairly recently, been incorporated into part of the Natural England Coastal Path supposedly to encourage healthy living and exercise and enjoyment of natural surroundings. It is a fact that natural surroundings and a long sight view of horizons has major benefits to positive mental health.	The environmental effects to the seabed are assessed in **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-050]**, specifically including the area of the proposed export cable corridor which passes through the no-trawling zone assigned to protect kelp beds. Due to the short-term and localised nature of this impact and the tolerance and recoverability of the majority of the benthic receptors, the significance of the residual effect is deemed Minor Adverse, Not Significant in EIA terms. The environmental effects to fish and shellfish, marine mammals, and migrating birds are assessed in **Chapter 8: Fish and shellfish ecology, Volume 2** of the ES **[APP-049]**, **Chapter 11: Marine mammals, Volume 2** of the ES **[APP-052]** and **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES **[APP-053]** and no significant effects are predicted to occur.

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		Whilst Marine Net Gain is not currently mandated in the same way as onshore (terrestrial) biodiversity net gain (BNG), in recognition of the principles set out in the NPS EN-1 (DESNZ, 2023a) that came into force in 2024, the Applicant is currently exploring opportunities to partner with organisations who are able to deliver marine benefits in the region. **Chapter 22: Terrestrial ecology and nature conservation**, Volume 2 of the ES **[APP-063]** assessed the potential effects of the Proposed Development on invertebrates which included surveying. Key habitats for terrestrial invertebrates are avoided by the onshore cable corridor or are crossed by trenchless crossings, and embedded environmental measures have been included in the DCO Application to minimise, reduce, and avoid potential impacts. Terrestrial invertebrates were scoped out from requiring further assessment due to the lack of pathway of effects and limits potential scale of impact. Further recent reviews of potential ecological effects of offshore wind farms have not identified insect collision as a risk. These include a 2021 study completed on behalf of the IUCN (Bennun et al., 2021) and one published in the journal Nature in 2022 (Galparsoro et al., 2022). The ES assessments undertaken have concluded that no significant effects on marine ecology, terrestrial ecology or ornithology are likely to occur as a result of the Proposed Development alone or with other relevant projects or plans. Similarly, the **Report to Inform Appropriate Assessment** **[APP-038]** concludes that there will be no adverse effect to any of the protected sites assessed. The seascape and visual effects of the Proposed Development WTGs are assessed in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**. The Applicant recognises that significant effects on views, perceived character and certain special qualities of the designated landscapes have been identified, including on the South Downs National Park and a limited part of the Chichester Harbour Area of Outstanding Natural Beauty (CHAONB). **Chapter 28: Population and human health, Volume 2** of the ES **[APP-069]** and **Appendix 28.1: Human health baseline, Volume 4** of the ES **[APP-219]** assess the potential effects for population and human health. The assessment concluded that the magnitude of impact on human health from potential changes to air quality, noise and vibration exposure, transport nature and flow rate, visual amenity, access to opportunities for physical activity, and socio-economic factors, as a result of the Proposed Development is negligible, which is not significant in EIA terms. **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** addresses the potential effects of the Proposed Development on Public Rights of Way (PRoWs) including the England Coastal Path. During the construction phase,

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Ref	Relevant representation comment	Applicant's response
		amenity may be slightly affected during landfall construction, however as landfall construction will be undertaken via horizontal directional drilling operations the England Coastal Path (i.e. works will occur underneath the coastal path) will remain open during the works. No likely significant effects for onshore recreation activity has been identified from the assessment for the operation and maintenance phase and decommissioning phase. All Public Rights of Way (PRoW) affected during onshore construction works are identified in **Section 4.3** within the **Outline Public Rights of Way Management Plan [APP-230].** Table 4-1 within the **Outline Public Rights of Way Management Plan [APP-230]** includes each PRoW impacted by the onshore elements of the Proposed Development, the type of impact and if this impact in temporary or permanent. Paragraph 4.2.5 within the **Outline Public Rights of Way Management Plan [APP-230]** secured via Requirement 20 of the **Draft DCO [PEPD-009]** confirms that no PRoW will be permanently affected by the Proposed Development. Section 5 of the **Outline Public Rights of Way Management Plan [APP-230]** outlines the proposed management measures for the impacted PRoWs including (but not limited to): • Temporary closures and diversions; • Managed crossings; • Shared routes; • Inspection and maintenance; • Signage management; and • PRoW sequencing.
NSB6.6	Rampion 2 would undermine, rather than support the achievement of sustainable development of south coast inshore waters and affected coastal and inland communities and the adverse effects of Rampion 2 outweighs the benefits. Looking closely at a balance across the 3-pillars of sustainable development (social, environment and economic) from construction, through operation and decommissioning stages, thus considering how Rampion 2 impacts current and future residents and the visitor economy. Separately, the economic argument for Rampion 2 does not stand up. The present Rampion 1 field has an efficiency rating of just 37-38% on an average annual basis. This coastline is not a logical wind catchment area. We will be adding further important data and information during the Examination period when allowed. *Please see these two links which we feel are pertinent to add to this Representation, with PINS permission. The first being a BBC South report and the second factual animations that have been produced, by Protect Coastal Sussex (PCS) in lieu of the unavailable requested animation from Rampion 2 [REDACTED] [REDACTED]	Section 104 of the Planning Act 2008 outlines that the DCO Application must be decided in accordance with the relevant NPS (in this case: NPS EN-1 (DECC, 2011a), NPS EN-3 (DECC, 2011b) and NPS EN-5 (DECC, 2011c) with NPS EN-1 (DESNZ, 2023a), NPS EN-3 (DESNZ, 2023b) and NPS EN-5 (DESNZ, 2023c), that came into force in 2024, relevant considerations in the decision-making process) unless (inter alia) the adverse impacts of a proposal would outweigh its benefits. Section 5.4 of the **Planning Statement [APP-036]** summarises the potential environmental, social and economic benefits and the adverse impacts of the Proposed Development drawing on relevant information in line with NPS EN-1. Section 5.5 of the **Planning Statement [APP-036]** sets out the planning balance where the potential benefits and impacts of the Proposed Development are weighed up. Although, inevitably, there are adverse impacts associated with the scale and type of infrastructure that forms the Proposed Development, the Applicant considers that the planning balance is firmly in favour of the Proposed Development and the benefits outweigh the adverse impacts.

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		Paragraph 2.2.28 of NPS EN-1 (DECC, 2011a), extant at the time of submission of the DCO Application and against which it will be tested, outlines that the NPS takes full account of the objective to contribute to the achievement of sustainable development. Paragraph 2.6.3 NPS EN-1 (DESNZ, 2023a) (published in November 2023) which took effect in January 2024, and is a relevant consideration in the decision-making process, also states that the NPS takes full account of the objective to contribute to the achievement of sustainable development (in a similar manner to paragraph 2.2.28 of NPS EN-1 (DECC, 2011a)), whilst paragraph 2.6.5 states that the UK Government believes that the NPSs provide policies that both respect the principle of sustainable development and can facilitate the consenting of energy infrastructure at the scale required. The Applicant considers that the Proposed Development represents sustainable development in accordance with the NPSs outlined above. A NPS review document (**Statement on the new National Policy Statements for Energy** (document reference 8.29)) has been submitted at Deadline 1 to provide a comparison of significant changes between the draft NPSs of March 2023 against the NPS as subsequently designated by Parliament in January 2024. The range of assessments in **Chapter 6: Coastal processes [APP-047]** to **Chapter 29: Climate change, Volume 2** of the ES **[APP-070]** demonstrate how the Applicant has taken into account how the Proposed Development would affect social, economic and environmental well-being. The Applicant considers that the Proposed Development represents sustainable development. Please see response to reference NSB2.3 in **Table 7-2** regarding the efficiency of wind turbines on the South Coast.

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Table 7-7 Applicant's Response to Sussex Wildlife Trust

Ref	Relevant representation comment	Applicant's response
NSB7.1	Sussex Wildlife Trust is registering as an Interested Party to raise comments on the progression of the Development Consent Order application for the Rampion 2 Offshore Windfarm. Since climate change is one of the most serious threats to biodiversity, we support efforts to reduce carbon emissions by producing renewable energy. However, we also recognise that all forms of energy generation will have environmental costs. It's therefore vital that renewable energy projects are planned and delivered to avoid harming wildlife and deliver an overall net gain for biodiversity to support nature's recovery.	The acknowledgement that Proposed Development will contribute to sustainable energy production is welcomed by the Applicant. The Proposed Development will help meet the urgent need for new renewable energy infrastructure in the UK and supporting the achievement of the UK Government's climate change commitments and carbon reduction objectives. The Proposed Development type is recognised as being a critical national priority in the revised NPS EN-1 (November 2023) and NPS EN-3 (November 2023) which are considered to be relevant to the determination of the present DCO Application, for which there is an urgent need to deliver. The assessment set out in **Chapter 29: Climate change, Volume 2** of the ES **[APP-070]** concludes the Proposed Development has a lifetime greenhouse gas (GHG) emissions saving of 35,901 kilotonne carbon dioxide equivalent ($ktCO_2e$). The Proposed Development will continue to offset GHG emissions until 2050, and therefore make a positive contribution the UK Government target to reach net zero emissions in 2050. The likely significant environmental effects of the Proposed Development have been comprehensively assessed in the ES. Wherever practicable, likely significant adverse effects have been avoided or minimised through embedded environmental measures in the design of the Proposed Development, taking into account the findings of the ES, consultation with stakeholders and national and local policy requirements. The Applicant has committed to deliver at least 10% biodiversity net gain (BNG) (see **Appendix 22.15 Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** and C-104 of **Commitments Register** **[APP-254]**) BNG is secured via Requirement 14 of the **Draft DCO** **[PEPD-009]**.
NSB7.2	**Rochdale Envelope** The extensive use of the Rochdale Envelope has made it challenging to pass meaningful comment as a stakeholder, due to the high level of uncertainty regarding the proposed development, the techniques to install, and by association the types of mitigation that could be used. We are therefore uncertain of the environmental impacts of the project, and that the developer is committed to sufficiently mitigate these impacts. We query whether this application could be considered incomplete due to the very high level of uncertainty for a project of this scale.	The use of the Planning Inspectorate's Advice Note Nine: Rochdale Envelope which along with National Policy Statements EN-1, EN-3 and EN-5 (Department of Energy and Climate Change 2011a; 2011b; 2011c) endorses the use of the Rochdale Envelope approach (Planning Inspectorate, 2018) and the projects accordance with *The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017* ('EIA Regulations 2017') are described in paragraphs 5.8.14 and 5.8.15 within **Chapter 5: Approach to the Environmental Impact Assessment, Volume 2** of the Environmental Statement (ES) **[APP-046]**, with further detail provided in **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**.
NSB7.3	**Commitments Register** The Commitments Register lacks detail and includes frequent caveats i.e. commitments to be delivered 'where practical' or 'where possible'. This reduces confidence that commitments will be adhered to. We seek clarity as to how the developer will be held to account on the commitments made at this stage in the process, and how they will be monitored and enforced during construction.	There have been opportunities for the development of environmental measures which have been adopted to reduce the potential for environmental impacts and effects. These were included directly into the design of Rampion 2 as embedded environmental measures and are detailed in the **Commitments Register** [**APP-254**]. The Commitments Register was initially presented in the Scoping Report and subsequently updated throughout the

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Ref	Relevant representation comment	Applicant's response
	It is also unclear from the Register which are commitments, and which are essential requirements.	Statutory Consultation exercises and in the Environmental Statement to reflect design evolution and consultation feedback. The **Commitments Register** **[APP-254]** includes a column for the securing mechanism for each embedded environmental measure and its related commitment reference. This cross-refers to the mechanism, for example a requirement in the **Draft DCO** **[PEPD-009]** Schedule 1 Part 3. Where there is an accompanying document such as an outline plan submitted with the DCO Application with which works must be undertaken in accordance with, this is also referred to under the 'Relevant Application Documents' column. The statements referenced in this relevant representation are commonly used and accepted throughout the industry and in other Development Consent Order applications. The Applicant has identified the appropriate embedded environmental measures to avoid, reduce or minimise effects based on best practice and industry experience. There is the need for some flexibility where a measure may not be applicable in a specific scenario during construction or require slight adjustment, in such instances this would be confirmed in the stage specific documents secured in the **Draft DCO** **[PEPD-019]** such as the detailed Code of Construction Practice (CoCP). The Applicant would need to confirm that no new or materially different environmental effects would arise in this instance. Note that for added clarity on the corresponding securing mechanisms, the **Commitments Register** **[APP-254]** provided at application submission has e been updated at Deadline 1 to include further detail e.g. the full reference to DCO requirements and addition of the location of further information within the Application documents.
.NSB7.4	**Offshore** We believe the proposal should commit to the type of foundations being used for the wind turbine generators. There is a high level of variation of impacts on the sea bed between the proposed foundation types.	The type of wind turbine generator foundation to be installed will be determined from the results of geotechnical investigations, existing environmental sensitivities and the final wind turbine generator selection. It is anticipated that more than one type of foundation may be used across the Proposed Development. The maximum design scenario which has been assessed in **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-50]** has been based on a worst case scenario of foundation types and no significant effects are predicted to occur.
NSB7.5	We would like to see high level of commitment to micro-siting of all elements of construction to minimise environmental impact, particularly to irreplaceable habitats.	The Applicant has committed to undertaking targeted pre-construction surveys of priority habitats as referenced in the **Offshore In Principle Monitoring Plan** **[APP-240]**. The Applicant will ensure the extent of these features are mapped as part of these surveys. Proposals for micro-siting around priority habitats are presented within the **In Principle Sensitive Features Mitigation Plan** **[APP-239]**. The final Plan is to be submitted to and approved in writing by the Marine Management Organisation, as secured in Condition 11(1)(k) of

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		the draft Marine Licence (dML) (Schedules 11 and 12 of the **Draft DCO [PEPD-009]**). Micro-siting required for anthropological constraints, marine heritage receptors, environmental constraints including wind loading standards and projected changes in climate conditions during the operational life of the Proposed Development and marine designated areas or difficult ground conditions and choice of foundation types for all wind turbine generators will also be included in the design plan, secured in Condition 11(1)(a) of the draft Marine Licence (dML) (Schedules 11 and 12 of the **Draft DCO [PEPD-009]**).
NSB7.6	More specifically, we would like to see commitment to micro-siting for HDD exit pits at landfall location due to the high potential for habitat disturbance using this technique.	At the second statutory consultation (October-November 2022), the proposed DCO Order Limits were widened to the east to allow for flexibility in the location of the landfall compound. Though this area overlaps with the Climping Site of Special Scientific Interest (SSSI), impacts are avoided as the works are limited to underground cable installation as per Work No. 6 and Work No.7 (see Sheet No.1 of the **Onshore Works Plans [PEPD-005]**). As per the works description for Work No.6 and 7 in the **draft DCO [APP-019]**, these are "*works consisting of up to four transmission cables and associated cable ducts laid underground by horizontal directional drilling*." The above ground works at landfall are shown by Work No. 8 on the **Onshore Works Plans [APP-009]** and are outside the Climping SSSI. Dependent on the final alignment (determined during detailed design) these transmission cables may avoid passing underneath the Climping Beach SSSI altogether. Table 5-5 and paragraph 5.6.8 to 5.6.15 of the **Outline Code of Construction Practice [PEPD-033]** secure specific commitments related to the SSSI. This includes seasonal restrictions (C-217 secured via Requirement 22 of the **Draft DCO [PEPD-009]**) on undertaking the horizontal directional drill (HDD) works to avoid disturbance to wintering waterbirds using the SSSI and restriction on ground breaking activity and use of vehicles in the area (C-112 secured via Requirement 22 and 23 of the **Draft DCO [PEPD-009]**).
NSB7.7	We would like to see a commitment to noise abatement technology as this is now being used as standard practice for projects of a similar nature across Europe.	The Applicant confirms that the inclusion of **Draft Piling Marine Mammal Mitigation Protocol [APP-236]** secured via Schedule 11, Part 2 11 (l) and Schedule 12, Part 2 11 (l) of the **Draft DCO [PEPD-009]** in Table 8-13 of **Chapter 8: Fish and shellfish ecology, Volume 2** of the ES **[APP-049]** which is an embedded environmental measure related to the use of soft start procedures for piling to deter mobile marine life, therefore reducing the noise exposure to fish and shellfish receptors. With regards to mitigating against the potential for impacts to sensitive stationary receptors such as black seabream and seahorse, further mitigation measures have been proposed. These are detailed in **In Principle Sensitive Features Mitigation Plan [APP-239]**, and include noise abatement measures, and the development of a spatial and temporal zoning plan for piling secured via Schedule 11, Part 2 11 (k) and Schedule 12, Part 2 11 (k) of the **Draft DCO [PEPD-009]**.

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Ref	Relevant representation comment	Applicant's response
NSB7.8	Details on cable laying methodologies used during the installation of Rampion 1 should be referred to; the overall geology of the area is similar and there should be visible lessons learned from the post-consent surveys.	The outline methods proposed for cable burial on the Proposed Development are broadly similar those proposed by Rampion 1 at the consenting stage. The majority of the cable burial works on Rampion 1 were completed in 2017 and 2018, with works on the Proposed Development likely being undertaken approximately 10 years after this. Learning from industry experience (both Rampion 1 and across the UK) will be taken onboard and incorporated into the construction of the Proposed Development including the fabrication of new and more efficient burial tools, these learnings are expected to be proposed by contractors at the bidding stage for the cable installation works. Geotechnical information will be collected post-DCO consent award and will be provided to potential offshore cable installers during the tendering for these works. A technical evaluation of the methods proposed by the tendering parties will be undertaken as the start of cable burial risk assessment process and used as part of the decision-making process to select the preferred supplier. This evaluation will have regard to the experiences of Rampion 1. The aim of the project will be to select a contractor who, with their selected equipment and proposed methods, can bury the subsea cables in accordance with the assessment reported in the ES and the documents submitted as part of the DCO Application and minimise the likelihood of future cable exposures. This will help avoid having to undertake expensive remediation works. The cable burial risk assessment will be completed by the party contracted to undertake these works during the detailed design stage (as secured via Schedule 11, Part 2 11 (n) and Schedule 12, Part 2 11 (n) of the **Draft DCO [PEPD-009]**. .
NSB7.9	We have concerns over the 'Future Baselines' section 9.6.36-38 in ES Chapter 2 Volume 9. The wording of these paragraphs is meaningless regarding commitments from the developer, and specifically with regards to the recovery of the historical kelp beds. We suggest if the developer cannot make meaningful commitments, such as adaptive management of the construction, then this should be removed.	The purpose of the 'Future Baselines' section 9.6.36-38 in **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-050]**, is to describe potential changes or factors affecting the baseline looking forwards in time, without the Proposed Development. As stated in paragraph 9.6.38 of **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2 [APP-050]**, "*Any changes that may occur during the construction, operation and decommissioning of the Proposed Development should be considered in the context of both greater variability and sustained trends occurring on national and international scales in the marine environment, and the changes that will be expected to occur naturally in the absence of the Proposed Development*." Table 9-16 in **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES **[APP-050]**, lists the embedded environmental measures that the Applicant is committed to adopting in order to reduce the potential for effects on benthic subtidal and intertidal ecology.
NSB7.10	Onshore Construction methods The high degree of flexibility that has been built into the application results in a lack of specific detail, making it difficult to assess or comment on specific ecological impacts e.g. stage-specific LEMPs not yet produced, ground conditions not yet assessed.	As per Requirement 12 of the **draft DCO [PEPD-009]**, no stage of the authorised project within the onshore Order Limits are to commence until, for that stage, a written landscape and ecology management plan and associated work programme (which accords with the relevant provisions of the **Outline**

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		Landscape and Ecology Management Plan **[APP-232]** and Outline Code of Construction Practice **[PEPD-033]**) has been submitted to and approved by the relevant planning authority.
NSB7.11	The criteria for deciding whether HDD is viable at each proposed crossing point are unclear e.g. commitment C-5 states HDD will be used 'where this represents the best environment solution and is financially and technically feasible' and C-17 states open cut techniques will be used 'where trenchless techniques are…not practical'. We query whether the 'realistic worst-case scenario' presented in the Environmental Statement allows for changes to construction methods e.g. if a planned HDD crossing is altered to a trenched crossing	Paragraph 4.2.2 of Section 4.2 of the Outline Code of Construction Practice (CoCP) **[PEPD-033]** states that '*This Outline CoCP is accompanied by a Crossing Schedule (Appendix A) identifying locations where trenchless crossings will be provided'*. Commitments C-5 and C-17 will be updated in the Commitments Register **[APP-254]** with the Deadline 1 submission in response to this comment. Paragraph 4.2.3 of the Outline Code of Construction Practice (CoCP) **[PEPD-033]** also states *'Should an unexpected obstacle or constraint be encountered that requires an additional trenchless crossing, this would be confirmed in the crossing schedule accompanying the stage specific detailed CoCP for approval by the relevant planning authority*'.
NSB7.12	Climate resilience of construction techniques in the coastal zone The beach at Climping is highly mobile and already experiencing heavy erosion. Conditions may therefore be significantly altered by 2026 and continue to change during the construction process. We query whether this has been fully taken into account when assessing construction methods and to ensure minimal ecological impacts at this sensitive protected site.	Ecological impacts at Climping Beach Site of Special Scientific Interest (SSSI) are avoided through the use of horizontal directional drill (HDD) secured via descriptions of Work No.6 and Work No. 7 in the Draft DCO **[PEPD-009]**. This means that there will not be any surface construction works within the SSSI and only pedestrian access will be required to monitor the path of the drill head, see paragraphs 5.6.8 to 5.6.15 of the Outline Code of Construction Practice (CoCP) **[PEPD-033]**, that is secured via Requirement 22 of the Draft DCO **[PEPD-009]**. The onshore works begin at the closest potential landfall location around 170m north of the SSSI, thereby allowing adequate room to control for indirect effects (e.g. dust deposition, light spill from temporary lighting etc.). This has been considered within the assessment in Chapter 22: Terrestrial ecology and nature conservation, Volume 2 of the ES **[APP-063]**. Furthermore Chapter 6: Coastal processes, Volume 2 of the ES **[APP-047]** concludes that construction and operation and maintenance activities will not significantly impact coastal morphology and offshore sediment transport and therefore the development will not increase the risk of coastal erosion. Following ISH1, the Applicant has provided further information in request to Action Point 7 to provide more detail on HDD at Climping Beach, see Appendix 11 – Further information for Action Point 7, Applicant's Response to Action Points Arising from Issue Specific Hearing 1 (**Document reference 8.25**) submitted at Deadline 1. On the basis of the assessment undertaken within Chapter 6: Coastal processes, Volume 2 of the ES **[APP-047]** and commitment C-247 (Commitments Register **[APP-254]**) which secures via Requirement 26 of the Draft DCO **[PEPD-009]** , the coastal vulnerability of the Proposed Development is considered to be low, for which further mitigation will be identified and implemented post-granting of DCO consent as necessary.

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NSB7.13	**Biodiversity Net Gain (BNG)** The commitment to delivering at least 10% BNG is welcome (C-104) but the applicant's Biodiversity Gain Information lacks detail and certainty as to whether and how this will be achieved.	Requirement 14 of the **Draft DCO** **[PEPD-009]** secures the delivery of Biodiversity Net Gain (BNG) and **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** describes the mechanism by which it will be delivered including information on the timing of delivery (including front loading), the process for identifying biodiversity units (i.e. a hierarchy of criteria to identify the most suitable units available) and how these would be secured and managed (effectively as units purchased from strategic projects or via habitat banks (including potentially on land owned by affected parties). Without a detailed design and the opportunity to then fully quantify the losses, identify where these occur (including in which district) and identify what opportunities for provision are available at the time it is not possible to provide information on location, type etc. at present. This information would be provided and agreed as per Requirement 14 of the **Draft DCO** **[PEPD-009]**.
NSB7.14	Clarity is required on BNG delivery to ensure it is separate from and additional to the essential requirements under the mitigation hierarchy.	Biodiversity net gain is to be provided in line with Department for Environment, Food and Rural Affairs (Defra) guidance published in May 2023 'What you can count towards a development's Biodiversity Net Gain' (Defra, 2023).
NSB7.15	**Habitat restoration** Clarity is required on the type and total area of habitat to be permanently lost and the subsequent mitigation and compensation for this loss.	**Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]** identifies the location of permanent loss of hedgerow and woodland (noting that reinstatement in these areas will be of mixed scrub). The only other habitats where permanent loss will be evident is in modified grassland and arable field. Habitat reinstatement and indicative habitat creation within the Proposed DCO Order Limits is described in the **Outline Landscape and Ecology Management Plan** **[APP-232**]. A detailed Landscape Ecology and Management Plan will be produced through Requirements 12 and 13 of the **draft DCO** **[PEPD-009]**. The short fall of habitat units identified in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** will then be delivered as described in reference NSB7.13.
NSB7.16	We would like to see on-site habitat restoration delivering enhancements (compared to the baseline) at every opportunity.	The delivery of enhancements through on-site habitat restoration will be sought where the opportunity arises however the Applicant notes this will be dependent on individual negotiations with landowners during the detailed design phase. Details on the approach to delivering positive benefits for the environment through the provision of Biodiversity Net Gain is provided in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** and will be secured via Requirement 14 of the **Draft DCO** **[PEPD-009]**.
NSB7.17	Clarity is required on how lessons learned from Rampion1 will be fully incorporated to improve effectiveness of habitat restoration e.g. improved monitoring of reinstated hedgerows to avoid delays to remedial action.	The Applicant has considered lessons learnt from Rampion 1 and other projects as well as having researched best practice examples to inform its environmental mitigation measures. In relation to information on monitoring and remedial action, this can be found in the **Outline Landscape and Ecology Management Plan** **[APP-232]**. This will be further updated to include additional details sought by Relevant Representations at an upcoming Deadline.

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Ref	Relevant representation comment	Applicant's response
NSB7.18	We query whether there is sufficient evidence to support the effectiveness of hedgerow translocation as a restoration method, based on local conditions.	The realistic worst-case scenario used within **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement (ES) **[APP-063]** as the basis for assessment is that all hedgerows that are crossed are cut and replanted (mainly within notches). The temporary translocation of hedgerows has been included in commitment C-115 (**Commitments Register [APP-254]**) as it could provide a good option to retain diversity, aid the speed of reinstatement and provide structure. However, it is noted in C-115 (**Commitments Register [APP-254]**) that this will only be delivered where appropriate conditions exist and chances of success are good. This would be detailed in the Code of Construction Practice secured through Requirement 22 of the **Draft Development Consent Order (DCO) [PEPD-009]** and the Landscape and Ecology Management Plan secured through Requirements 12 and 13 of the **draft DCO [PEPD-009]**. It is a technique that has been highlighted as a way in which effects could be mitigated, however whether it is used or not depends on sign the Code of Construction Practice and the Landscape and Ecology Management Plan being approved by the relevant LPA and Natural England. The Applicant is of the opinion that this approach may be beneficial, on the basis of the implementation of appropriate monitoring and pre-agreed rapid responses to failure (i.e. ensuring additional planting is provided promptly). It should be noted that this approach (temporary translocation and replacement of hedgerows) was considered acceptable in the consented Brechfa Forest Connection project (EN020016) (see paragraph 5.2.99 and Requirement 28 of the Examining Authority's Report of Findings and Conclusions to the Secretary of State for Energy and Climate Change (Planning Inspectorate, 2016)).
NSB7.19	**Future capacity** We ask whether it is possible for the applicant to consider future needs at this stage e.g. to build in additional capacity now, so as to avoid the need for further cabling and works in future and therefore minimise disturbance and impacts on the natural environment.	The industry regulator requires every project to be designed and invested in an economic and efficient manner, to minimise cost to the end consumer. Once the Rampion 2 Offshore Wind Farm starts generating, the applicant is required by law to transfer the transmission assets (comprising the onshore substation, onshore export cables, offshore export cables and offshore substations) to a regulator appointed Offshore Transmission Owner ("OFTO"). During the transfer process, the regulator will set the efficient cost for which the transmission assets should have been delivered for, which sets the price the OFTO will pay for the assets. Though it is possible to include anticipatory investments in this process, Rampion 2 does not have evidence on any future projects which could make use of anticipatory investment. This would mean that the regulator could not award costs for such investment. The applicant therefore cannot commit to any anticipatory investments at this stage, such as installing more cables for any future project. If a project emerged which could make use of anticipatory investment ahead of the decision to construct Rampion 2, it may be possible to change this position if the additional assets could be built within the consent limits.

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Table 7-8 Applicant's Response to Littlehampton Heritage Group

Ref	Relevant representation comment	Applicant's response
NSB8.1	The Rampion 2 Application ignores the UK Government's strategic environmental advice to provide visual buffers for very large turbines. That is a primary mitigation and safeguard against unacceptable adverse seascape and visual effects for huge towers and turbines and controversy dividing local communities. We believe the Rampion 2 Examination Authority (ExA) should consider full respect for the advice in the rolling Offshore Energy Strategic Environment Assessment (OESEA) programme to be a Principal Issue for this Examination. Moreover, this issue is fundamental to the Application. We suggest it should be addressed in the Questions the ExA asks Interested Parties and the subject of a topic-specific hearing. Rampion 2 will have a transformative effect on coastal communities due to its sheer scale and inshore location, unlike any other offshore wind scheme in the UK. This Application proposes up to 90 large turbines up to 325m tall and wide in profile in arrays, starting only 8 statute miles from shore, and very visible from the shoreline and well into the area of the South Downs National Park. The giant turbines and blades will spread across a populous Sussex coast where most residents and visitors (though not all, we are told by interested parties) value the natural seascape, our heritage and all the intrinsic values and benefits natural seascapes provide for human health and well-being.	NPS EN-3 (DESNZ, March 2024) para 3.8.224 states that *"Where a proposed offshore wind farm will be visible from the shore and would be within the setting of a nationally designated landscape with potential effects on the area's statutory purpose, should be undertaken in accordance with the relevant offshore wind farm EIA policy and the latest Offshore Energy SEA, including the White 2020 report".* OESEA4 (2022) is the latest Strategic Environment Assessment (SEA). Considerations with respect to the visual impacts of offshore wind farms are provided In Section 5.8 and Appendix 1, with reference to the White 2020 report (White Consultants, March 2020). OESEA4 (2022) recognises that *"In practice development scenarios will vary for each individual wind farm and also the variables determining visibility for individual wind farms. The visibility of structures from the coast, or their intrusion on sites designated for their visual qualities, does not necessarily preclude development in planning (see: NPS (EN-1) and the MPS), and any consideration of coastal "buffers" is too generalised an approach to take into consideration the many anthropogenic and natural variations along the coast and the variety of development scenarios which might take place (e.g. installation number, type, design and orientation)".* The OESEA (2022) therefore does not suggest no-go areas for development, it is a strategic tool and is not guidance or a roadmap for placing of wind farms, which are allocated by The Crown Estate and it is not in the Applicant's remit to locate sites to avoid all impacts. High level 'buffer' studies do not ultimately replace the need for site specific assessment, which has been undertaken in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**, of which the findings have informed the project design and the embedded environmental measures, as described in Section 15.7 of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**. In respect of the SDNP and the Sussex Heritage Coast, the White 2020 report (White Consultants, March 2020) recommends a distance buffer of 40 km for WTGs of 301-350 m height based on a limit of visual significance (i.e. to achieve low magnitude of change on a high sensitivity receptor and therefore not significant). Rampion 2 cannot achieve this visual buffer from the SDNP or Heritage Coast, however much of the Heritage Coast and SDNP do fall into the range (24 – 35 km) of medium magnitude identified in the White 2020 Report (Table 13.1) and the more distant areas of the SDNP fall into the low magnitude (35 – 44 km) category. **Chapter 15: Seascape, landscape and Visual Impact Assessment, Volume 2 of the ES** [**APP-056**] and White 2020 Report (White Consultants, March 2020) would therefore align that based on distance, the magnitude of change would not be 'high' from the Heritage Coast or the wider open downs of the SDNP to the north.

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Ref	Relevant representation comment	Applicant's response
NSB8.2	Rampion 2 will have a considerable impact on both local residents and the visitor economy – the very rationale for OESEA advice and safeguards. It certainly risks bitterly dividing communities, not inspiring them. And it will significantly impact the ecologically sensitive coastal waters in many ways. On the Rampion 2 Application itself, many area residents do not agree with the assumptions, hypothesis and conclusions that were first provided in the PEIR, and are now carried forward to the ES Application documents. That includes the use of highly selective out-of-date studies on attitudes to windfarms, instead of undertaking actual resident and visitor surveys of the scheme applied for (using before and after images); compounded by offering comparisons with two existing windfarms of a completely different scale and nature to claim that they verify a desk study hypothesis that Rampion 2, like all offshore windfarms in their desk study, has no impacts (negligible) on residents and visitors alike. This issue of applying OESEA advice to Rampion 2 was raised by local residents in the Community-led and organised public meeting of 24 August 2021 in the Littlehampton Millennium Chamber, which was full to capacity, including local Councillors. The developer's representatives only agreed to attend the day before the meeting (and then only virtually on a screen). In that meeting the developer's representatives were totally dismissive of the OESEA Strategic Advice, as documented in the comprehensive Meeting Report submitted as a formal response to the developer's statutory consultations. There was no mention of the OESEA strategic advice in the PEIR at that time, none that we could see. Now checking the ES Volumes of the Application, it appears OESEA advice barely receives mention. Only as a passing reference in a list of "other relevant guidance and advice" in the ES Volume 2, Chapter 2 Policy and Legislation Context (under other relevant policy); and then gets a mention in boxes (in ES Volume 2, Chapter 15: Seascape, landscape, and visual impact assessment) and even that only to refute the serious concerns about landscape and seascape change and impacts raised directly by the Southdown National Park Authority (SDNPA). The SDNPA reflects the views and conclusions of many residents who are actually aware of what is being proposed. **Policy Relevance** Careful consideration of the OESEA advice in the Rampion 2 Examination is wholly consistent with NPS (2011) EN-3 Part 2: Assessment and technology specific information (offshore wind), as in: Para 2.6.15 "Through the Offshore Energy Strategic Environmental Assessment 2009 (SEA) process ….. the Government concluded that there are no overriding environmental considerations to prevent the achievement of the plan/programme for offshore wind, if mitigation measures are implemented to prevent, reduce and offset significant adverse effects….." Where it is argued the OESEA visual buffer advice is put there to reduce and offset significant adverse effects (including social, socio-economic and ecological effects). Para 2.6.16 "In addition to new offshore projects, the Government has decided that, in line with Recommendation 6 of the Post Consultation Report (PCR), there is potential for capacity extensions to existing wind farm leases within UK waters. However, this will require careful, site-specific evaluation through the planning process, since significant new information on sensitivities and uses of	The Applicant has considered the visual impact of the offshore infrastructure in its assessment of the effects on the tourism economies of Sussex coast (paragraphs 17.10.20 to 17.10.35 within **Chapter 17: Socio-economics, Volume 2** of the Environmental Statement (ES) **[APP-058]**. **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** outlines relevant studies and evidence from offshore wind farms in the UK which show that there has been no evidence of overall negative impact on the tourism economy from the development of offshore wind farms in the UK and there are a number of UK offshore wind farms which are operational that are less than 25km from shore (including Westermost Rough, Humber Gateway, Lincs, Thanet, Kentish Flats Extension, Gwynt y Mor and Rampion 1). This evidence included analysis of tourism employment numbers for Rampion 1 which showed higher levels of tourism and employment across Sussex coastal seaside towns over the period in which Rampion 1 was operational compared to before Rampion 1 commenced construction. The assessment in **Chapter 17: Socio-economics, Volume 2** of the ES **[APP-058]** explores the impact on tourism and concludes that overall, when all influencing factors are considered, the effect of the Proposed Development on the volume and value of tourism across Sussex is expected to be negligible. While there may be some people with negative perceptions of offshore wind farms who may be deterred from visiting, these are likely to be small in number and could be offset by those who are more likely to visit the area due to the development of offshore wind. For example, those visiting the existing Rampion 1 visitor centre or those going on boat trips to the offshore infrastructure of the Proposed Development when operational. Please see response NSB8.1 regarding concerns relating to OESEA. National Policy Statement (NPS) EN-1, Section 3.4 (Department of Energy and Climate Change (DECC), 2011a), extant at the time of submission of the DCO Application and against which it will be tested, identifies a strong need case for renewable electricity generation to assist in the reduction of UK CO_2 emissions and to mitigate climate change. Furthermore, the revised NPS (Department of Energy Security and Net Zero (DESNZ) 2023a; 2023b and 2023c) are considered to be important and relevant to the determination of the present DCO Application. The Proposed Development type is recognised as being a critical national priority in the revised NPS EN-1 (DESNZ, 2023a) and NPS EN-3 (DESNZ, 2023b), for which there is an urgent need to deliver.

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	these areas has become available". In the Rampion 2 case, this site-specific evaluation with the OESEA is essential both due to its setting; and also to take into account the bid criteria for offshore wind extensions in 2017 was that extensions could be no larger than the existing project (what emerged is a Rampion 2 "extension" scheme of 1,200 MW where the existing Rampion installation is 400 MW). And Para 2.6.17 "Applicants should set out how they have drawn on the Government's Offshore Energy SEA in making their site selection". The OESEA is also relevant in the NPS (2023, proposed) EN-3 under "Factors influencing site selection and design" (Section 3.8.25). We thus believe full respect for the Government's own strategic environmental advice is a fundamental concern in the Rampion 2 case. That should be a Principal Issue in the Examination as well as the subject of a topic-specific Hearing. The clear indication is the Application regards the OESEA advice as irrelevant. We otherwise hope the Examination Panel gives substantial weight to the importance of upholding the OESEA Advice that offers a "last" essential environmental safeguard for coastal communities, which all offshore windfarm industry actors, foreign or domestic, must fully respect. This is particularly important and urgent given the Government's stated ambition is to fast-track offshore wind Applications - mainly by limiting local voice from affected coastal communities.	

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Table 7-9 Applicant's Response to West Sussex Local Access Forum

Ref	Relevant representation comment	Applicant's response
NSB9.1	The West Sussex Local Access Forum (WSLAF) interest is in the treatment of public rights of way during construction work, to ensure they are kept open and available to all legitimate users as far as possible, with appropriate crossing points if necessary and that any gates needed are easily usable by all appropriate classes of user. Any planned closures should be as short as possible with warning notices posted in advance showing alternative routes and helpline numbers. Also, in regard to reinstatement of affected areas of the surface of public rights of way, that this should be to the highest possible standard.	Public Rights of Way (PRoW) affected during onshore construction works are identified in Section 4.3 within the **Outline Public Rights of Way Management Plan [APP-230]**. Table 4-1 within the **Outline Public Rights of Way Management Plan [APP-230]** includes each PRoW impacted by the onshore elements of the Proposed Development, the type of impact and if this impact in temporary or permanent. Paragraph 4.2.5 within the **Outline Public Rights of Way Management Plan [APP-230]** confirms that no PRoW will be permanently affected by the Proposed Development. Section 5 of the **Outline Public Rights of Way Management Plan [APP-230]** outlines the proposed management measures for the impacted PRoWs including (but not limited to): • Temporary closures and diversions; • Managed crossings • Shared routes; • Inspection and maintenance; • Signage management; and • PRoW sequencing. Section 5.2 of the **Outline Public Rights of Way Management Plan [APP-230]** also identifies commitments (C-18, C-32, C-161, C162 and C-202) within the **Commitments Register [APP-254]** (updated for the Deadline 1 submission) which have been incorporated into the management of PRoWs which are impacted by the onshore elements of the Proposed Development. Details of the proposed PRoW temporary closures and PRoW diversions are provided in the **Access, rights of way and streets plan [APP-012].** The provision of a Public Rights of Way Management Plan to be submitted to and approved by the highway authority in consultation with the relevant planning authority is secured via Requirement 20 in the **draft DCO [PEPD-009]**.

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Table 7-10 Applicant's Response to Brighton & Hove Economic Partnership (BHEP)

Ref	Relevant representation comment	Applicant's response
NSB10.1	The BHEP generally supports the Rampion 2 proposals and is looking forward to commenting in depth with the publication of any associated economic impact statement that is forthcoming.	The Applicant welcomes Brighton & Hove Economic Partnerships Relevant Representation and support for the Proposed Development.

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Table 7-11 Applicant's Response to CowfoldvRampion

Ref	Relevant representation comment	Applicant's response
NSB11.1	We have submitted evidence to demonstrate that the local community of Cowfold was not consulted about the proposed substation being located at Oakendene, Cowfold. Furthermore, the decision was made without sufficiently detailed studies, as evidenced by the contents of the PEIR and DCO submission. This significant decision should have been supported with proper research and an understanding of the implications. Instead, it appears to have been selected because there was no local objection, with retrofitting of evidence as to the decision-making process. There was no local opposition because the Cowfold community knew nothing about it. This has led, we believe, to a failure to properly assess the reasonable alternatives as they are obliged to do under EN-1 section 5.4, mitigation hierarchy 'only when significant harm cannot be avoided should impacts be mitigated'. We would argue that they CAN be avoided by use of an alternative less damaging site. Nor have they fully appreciated the impacts on communities and the environment, to the point where the impacts outweigh the benefits. In NPS EN-3, section 3.8.20, the applicant must show that there are no reasonable alternatives, even in cases of imperative reasons of overriding public interest. With respect to the substation site, we will present evidence to show that there are better alternative sites, and as argued by the Protect Coastal Sussex Alliance, this is true for the project as a whole, not just the substation.	The **Consultation Report [APP-026]**, sets out the numerous rounds of statutory and non-statutory consultation including notices, advertisements and leaflets around the proposed cable route, including the village of Cowfold. Additionally, the Applicant attended a public Q&A session organised by the Parish Council in November 2022, and hosted a public information event in June 2023. Issues pertaining to Cowfold are drawn together from page 35 of the **Consultation Report [APP-026]**. **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** describes the alternatives studied by the Applicant and a comparison of their environmental effects across the project as a whole. This includes the alternatives considered and consulted on prior to the DCO Application. As described in **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**, the Proposed Development has been developed through a multi-disciplinary design process including environment, engineering, landowner, and cost considerations. The Applicant has sought to avoid, reduce, or minimise the effects through the design process and also by identifying and securing embedded environmental measures. It is acknowledged that some residual effects remain across the site. The Applicant notes that NPS EN-1 (2011) states there is no "*general requirement to consider alternatives or to establish whether the proposed project represents the best option*". This is reflected in the recently published NPS-EN1 (2023). Paragraph 5.9.10 of NPS (EN-1 (DECC, 2011a) (Draft NPS EN-1 paragraph 5.10.31, DESNZ, 2023a) sets out aspects that the Secretary of State (SoS) should consider when determining whether there are exceptional circumstances that would support the grant of development consent in a National Park. The Applicant has considered the key policy tests in the NPS EN-1 relating to development taking place within the SDNP. The Applicant considers that the Proposed Development is demonstrably in the public interest, that there are exceptional circumstances for granting the Proposed Development, and that the impacts of the Proposed Development on the SDNP are outweighed by the benefits of the scheme (see **Planning Statement [APP-036]**). Section 3.6 of **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** provides the information on the onshore substation site selection process. **Section 3.6** describes the site selection process and the reasons for other sites being discounted based on the multi-disciplinary factors identified in the paragraph above. The selection of Oakendene is clearly stated as favourable for engineering, cost, and landowner considerations in paragraphs 3.6.23 to 3.6.25 of **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**. Significant weight was also given to the environmental constraints and related policy in the overall balance of the decision. This Applicant has also developed further embedded environmental measures that have been presented in the application including the design principles in the **Design and Access Statement [AS-003]**, **Outline Landscape and Ecology Management Plan [APP-232]** and **Outline Operational Drainage Plan [APP-223]** secured via Requirements 8, 12, and 17 of the **Draft DCO [PEPD-009]** respectively. As requested by the Examining Authority at ISH1, the Applicant has provided further information on the decision to discount the Wineham Lane North site for the onshore substation (see Appendix 2 – Further information for Action Point 4, **Applicant's Response to Action Points Arising from Issue Specific Hearing 1** (Document reference 8.25) (submitted at Deadline 1).

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Ref	Relevant representation comment	Applicant's response
NSB11.2	Rampion consistently promised, but failed to deliver, detailed surveys or studies on engineering, the environment, a montage or appropriate traffic modelling, despite numerous requests from various organisations. Even now, when more data has been revealed since the DCO submission, there are too many inconsistencies between, and errors and omissions in the documents to allow proper assessment of them in the time available until the Relevant Representation deadline. This will inevitably allow less time for proper and thorough examination and for the determination of correct mitigation measures. Some of these issues are laid out in the Appendix below. We therefore ask you please to exercise your discretion to extend the pre-examination period as much as possible, or even to halt the process altogether, in the interests of allowing people adequate time to meaningfully assess the evidence presented, thus ensuring the best outcome for the project, communities and the environment.	The Applicant has undertaken an Environmental Impact Assessment (EIA) which considers and assesses the likely significant effects of the Proposed Development on social, economic, and environmental well-being. The **Environmental Statement (ES) Volume 2** [**APP-042** to **APP-072**], and **Volume 4** [**APP-120** to **APP-222**], reports the findings of the EIA. The ES also provides information about the Proposed Development including its context, a full description of the Proposed Development and its construction, the main alternatives considered, the consultation process that was part of the EIA, and any relevant technical information that has been used to assess the likely significant effects of the Proposed Development. The ES and includes a series of chapters that consider and assess the likely significant effects of the Proposed Development in relation to each relevant environmental aspect. Further information has been submitted into the Examination as outlined in the Pre-Exam Procedural Deadline A submissions on 16 January 2024, this included revisions to address issues raised by the Examining Authority in the Section 51 advice **[PD-002]** and requests made in the Rule 6 letter **[PD-006]**, further assessment work undertaken since the DCO Application submission (such as the supplementary geophysical survey results), and to capture errors and omissions.
NSB11.3	They have failed to understand this location and its traffic movements and the impacts of this on congestion, the Cowfold AQMA and the local economy. It has also resulted in an 11th hour switch to make Kent Street, a tiny single-track lane, with a width restriction of 6'6", bear a terrible burden of the goods vehicle traffic in an attempt to keep them out of the AQMA in Cowfold. Yet a significant amount of construction traffic will still need to go through the AQMA or affect it.	A range of embedded environmental measures have been provided by the Applicant as detailed within the **Commitments Register** **[APP-254]** which has been updated at Deadline 1 submission and secured through **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** which has been updated at Deadline 1 submission. This includes: • Commitment C-157: *The proposed heavy goods vehicle (HGV) routing during the construction period to individual accesses will be developed to avoid major settlements of Storrington, Cowfold, Steyning, Wineham, Henfield, Woodmancote and other smaller settlements where possible*; and • Commitment C-158: *The proposed heavy good vehicle (HGV) routing during the construction period to individual accesses will avoid the Air Quality Management Area in Cowfold where possible.* These commitments are also reflected in Table 5-1 of the **Outline CTMP** **[PEPD-035a]** secured via Requirement 24 of the **Draft DCO** **[PEPD-009]** which has been updated at Deadline 1 submission and confirms prescribed local HGV access routes for all sections of the onshore cable corridor and Table 5-2 which details specific local constraints and proposed management of construction traffic routes. These commitments ensure that HGV construction traffic will route along the A27 and A23 to gain access to the A272 east of Cowfold wherever possible, thereby avoiding the village centre. Therefore, only accesses A-52, A-56 and A-57 will require construction traffic to route through Cowfold Village centre. As calculated by using data included in Table 5-3 of the **Outline CTMP** **[PEPD-035a]** which has been updated at Deadline 1 submission, the impact of this commitment is the removal of up to 22,000 two-way HGV trips (11,000 HGVs) from Cowfold Village centre over the construction phase. Whilst Commitments C-157 and C-158 discourages traffic from routing through the Cowfold AQMA for robustness within the **Chapter 23 Transport, Volume 2** of the ES **[APP-064]**, it has been assumed that approximately 25% of HGV traffic will route through Cowfold from the A24 and A272 east of the village centre when entering or exiting construction accesses at

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		Oakendene, Kent Street or Wineham Lane. This accounts for the potential delivery of material or equipment to / from locations directly west of Cowfold or use of the Strategic Road Network and provides a robust assessment of impacts within Cowfold. The likely significant transport effects associated with the construction phase of the Proposed Development have been assessed in **Chapter 23: Transport, Volume 2** of the Environmental Statement (ES) **[APP-064]**, **Chapter 32: ES Addendum** (Document reference: 6.2.32) (submitted at Deadline 1) and **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[APP-197]** which has been updated at the Deadline 1 submission. At peak construction, taking account of the construction traffic routing contained within the **Outline CTMP** **[PEPD-035a]** which has been updated at Deadline 1 submission, the following effects have been identified for Cowfold: • At A281 south of Cowfold (Receptor 23): ▸ An HGV peak week increase of 12 HGVs per day, equivalent to an increase of 7.5% and approximately one HGV per hour; and ▸ A total construction traffic peak week increase of one HGV per day and 71 light goods vehicles (LGVs) per day (5-6 per hour), equivalent to a 1.1% increase in total traffic flow. • The A281 / A272 in the centre of Cowfold (Receptor 24): ▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 3.5% and 3-4 HGVs per hour; and ▸ A total construction traffic peak week increase of 19 HGVs and 154 LGVs (12-13 per hour), equivalent to a 0.7% increase in total traffic flow. • The A272 Station Road west of Cowfold Village centre (Receptor 25): ▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 4.6% and 3-4 HGVs per hour; and ▸ A total construction traffic peak week increase of 19 HGVs and 154 LGVs (12-13 per hour), equivalent to a 0.9% increase in total traffic flow. • The A272 Bolney Road east of Cowfold Village centre (Receptor E): ▸ An HGV peak week increase of 39 HGVs, equivalent to an increase of 5.5% and 3-4 HGVs per hour; and ▸ A total construction traffic peak week increase of 19 HGVs and 147 LGVs (12-13 per hour), equivalent to a 0.8% increase in total traffic flow. As noted within Institute of Environmental Management and Assessment (IEMA) (1993) publication Guidelines for the Environment Assessment of Road Traffic an increase of less than 10% is not discernible environmental impact as is within day-to-day fluctuations in traffic flow. Therefore, no significant effects are predicted to occur within Cowfold. **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** presents an assessment of air quality impacts from construction traffic. The assessment concludes that the Proposed Development

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		will not result in significant impacts on air quality, as a result of increased traffic on the local road network. An air dispersion traffic modelling study of the potential impacts on the Cowfold Air Quality Management Area (AQMA) is presented in Section 1.4 within **Appendix 19.1: Full results of construction road traffic modelling, Volume 4** of the ES **[APP-174]** with the assessment in **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** concluding that there are no significant impacts. An **Outline Construction Traffic Management Plan (CMTP) [PEPD-035a]** which has been updated at Deadline 1 submission is included as part of the DCO Application which details the routing of heavy goods vehicles (HGVs) during the construction phase of the Proposed Development. The **Outline CMTP [PEPD-035a]** which has been updated at Deadline 1 submission is underpinned by commitment C-158 of the **Commitment Register [APP-254]** which states proposed heavy goods vehicle (HGV) routeing during the construction period to individual accesses will avoid the AQMA in Cowfold where possible. This is secured by Requirement 24 of the **Draft DCO [PEPD-009]**. Kent Street is identified within the **Outline CTMP [PEPD-035a]** which has been updated at Deadline 1 submission, as a single track road which will be used as a construction traffic route to accesses A-61 and A-64 as shown on Figure 7.6.4d within the **Outline CTMP [PEPD-035a]**. The Applicant is currently reviewing options for the implementation of traffic management along Kent Street and accesses A-61 and A-64 to provide safe access for construction and general traffic. This may involve measures such the implementation of a speed limit reduction, passing places, or managed access via banksmen. A traffic management plan for Kent Street will be produced as required at Deadline 2. The outcomes of this review will be discussed with West Sussex County Council at the earliest opportunity with the aim of reaching an agreement in principle to the traffic management strategy. This would then be secured through a detailed CTMP for the stage of the authorised development comprising Kent Street which will be required to be submitted and approved before commencement within that stage in accordance with requirement 24(1)(a). It should be noted that both access A-61 and A-64 are located north of residential properties on Kent Street and therefore construction traffic will not route past these properties. This reflects commitment C-157 (**Commitment Register [APP-254]** which has been updated at Deadline 1 submission) which states that HGVs should avoid smaller settlements where possible, the prescribed local access routes defined in Table 5-1 of the **Outline CTMP [PEPD-035a]** which has been updated at Deadline 1 submission and the mitigation identified to avoid the use of small single-track roads as much as possible as defined in Table 5-2 of the **Outline CTMP [PEPD-035a]** which has been updated at Deadline 1 submission . For clarification, the Applicant would like to note Figure 7.6.6c showing local access routes, Figure 7.6.9c showing routes from compounds to sites and Figure 7.6.13c showing LGV construction access routes in the **Outline CTMP [PEPD-035a]** have been updated at the Deadline 1 submission to reflect that construction traffic will not use Kent Street south of access A-61 and A-64.
NSB11.4	The Oakendene site is 1 mile east of Cowfold along the A272, a notoriously dangerous accident hot spot, and would be made worse by the increased traffic to the site.	The likely significant transport effects of the construction phase of the Proposed Development has been assessed within the **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** and

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		Chapter 32: ES Addendum (Document reference: 6.2.32) (submitted at Deadline 1). There are four receptors within Cowfold that have been assessed. Of the four receptors assessed, the A272 Bolney Road east of Cowfold Village centre is the closest to the Oakendene construction compound. As part of the Proposed Development this is forecast to experience an average weekly flow of 39 HGVs, equivalent to an increase of 5.5% or 3-4 per hour. At peak construction activity, access A-62 (Oakendene Compound) will cater for 326 HGV two-way movements and 456 LGV two-way movements across a one-week period. This is the equivalent of 156 construction traffic two-way movements per day or 12-13 per hour (approximately 6 entering and 6 exiting the compound). At peak construction activity, access AA-63 (Oakendene Substation) will cater for 326 HGV two-way movements and 564 LGV two-way movements across a one-week period. This is the equivalent of 178 construction traffic two-way movements per day or 14-15 per hour (approximately 7 entering and 7 exiting the access junction). Noting a 24-hour future baseline flow of 20,578 vehicles on the A272 Bolney Road east of Cowfold Village centre, the Proposed Development will generate a 3.8%-4.3% increase in traffic at Oakendene. As day-to-day variation of traffic on a road is frequently + or -10%, it can therefore be assumed that projected changes in traffic of less than 10% will result in no significant transport effects.
NSB11.5	There are 130 businesses in Cowfold which could be negatively affected by the additional traffic congestion, loss of business, delayed deliveries, and diversions using adjacent lanes /minor roads.	See response above to **reference NSB11.4** above.
NSB11.6	From a wider perspective, over 18,500 road users would be severely inconvenienced by sitting in unnecessary queues as they approach the village of Cowfold every day. Sitting in traffic for 15 minutes is estimated to cost c. £20m pa in lost productivity, not to mention the additional fuel, and potential loss of trade for local businesses, for around six years.	**Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** presents an assessment of air quality impacts from construction traffic. The assessment concludes that the Proposed Development will not result in significant impacts on air quality, as a result of increased traffic on the local road network. An air dispersion traffic modelling study of the potential impacts on the Cowfold Air Quality Management Area (AQMA) is presented in Section 1.4 within **Appendix 19.1: Full results of construction road traffic modelling, Volume 4** of the ES **[APP-174]** with the assessment in **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** concluding that there are no significant impacts. An **Outline Construction Traffic Management Plan (CMTP) [PEPD-035a]** which has been updated at Deadline 1 submission is included as part of the DCO Application which details the routing of heavy goods vehicles (HGVs) during the construction phase of the Proposed Development. The **Outline CMTP [PEPD-035a]** which has been updated at Deadline 1 submission is underpinned by commitment C-158 of the **Commitment Register [APP-254]** which states proposed heavy goods vehicle (HGV) routeing during the construction period to individual accesses will avoid the AQMA in Cowfold where possible. A stage specific CTMP is required to be submitted in accordance with Requirement 24 of the **Draft DCO [PEPD-009]**.
NSB11.7	The standing traffic will exacerbate the existing air pollution problems in this AQMA village, further affecting the health and wellbeing of the local community. The necessary route through the village to access cable routes has not been considered	Section 3.6 of **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** provides the information on the onshore substation site and cable selection process. Section 3.6 describes the site selection process and the reasons for other sites being

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	with regards to pollution or congestion. This disastrous scenario could be avoided if the substation were located at Wineham Lane North or South site, next to Rampion 1.	discounted based on the multi-disciplinary factors identified including environment, engineering, landowner and cost considerations. The selection of Oakendene is clearly stated as favourable for engineering, cost, and landowner considerations. Significant weight was also given to the environmental constraints and related policy in the overall balance of the decision.
NSB11.8	There are only around five businesses in the Wineham vicinity, and the traffic does not back up to Wineham Lane, making it unlikely to cause as much disruption to road users, as demonstrated during the construction of Rampion1.	Developer of Rampion 2, RWE, is a leading offshore wind company with many projects around the world. RWE utilises robust contracts and continues to learn from previous construction projects to ensure project delivery is met on time. The grid connection agreement is for 2029-30 and The Applicant plans to be fully operational by the end of this decade to contribute to the UK target for a five-fold increase in offshore wind capacity by 2030. The EIA submitted in the Environmental Statement for Rampion 2 is based on parameters for the Rampion 2 development. An indicative construction programme for Rampion 2 is provided in Graphic 4-24 of **Chapter 4: The Proposed Development, Volumes 2** of the ES **[APP-045]**.
NSB11.9	Rampion 1 was supposed to take two years, but actually took six years to complete. They estimate the proposed construction will take 4 years so, by the Rampion 1 example, it might cause up to 12 years of disruption this time.	The proposed onshore substation site at Oakendene and surrounding area (referenced here as land within the proposed DCO Order Limits east of the A281) does support a range of habitats and species that are legally protected and / or notable including nightingale, grass snake, and hedgerows. The assessment provided in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement (ES) **[APP-063]** is not only based on the presence on habitats and species, but also considers potential pathways of effect that construction and/or operation and maintenance effects may pose to terrestrial ecology features. For example, nightingale (*Luscinia megarhynchos*) are identified as being present on or close to the onshore cable corridor in the vicinity of the Cowfold stream in **Appendix 22.13: Breeding bird survey, Volume 4** of the ES **[APP-191]** however, trenchless crossings (TCs) TC-25 and TC-26 are secured through the Crossing Schedule, part of the stage specific Code of Construction Practice through Requirement 22 of the **Draft DCO** **[PEPD-009]** and are in place to minimise losses of wet scrub, watercourses (Cowfold stream and a tributary of it) and meadow habitat (bordering the scrub) that this species is using. Although there will be loss of hedgerow and scrub between the A281 and the onshore substation at Oakendene, it is restricted and in locations that are less likely to support nightingale. This reduces the potential for disturbance to reduce productivity of individual pairs of nightingale. Based on areas where density of nightingale are high (e.g. active Ministry of Defence training facilities at Lodge Hill, Kent and Wakering Stairs, Essex) and levels of potential disturbance are great (including active artillery ranges) temporary construction disturbance (which will move rapidly along the onshore cable route) is not considered to be of particular concern for the temporary construction activities associated with the installation of onshore cable corridor for Rampion 2. As a Nationally Significant Infrastructure Project, Rampion 2 will deliver Biodiversity Net Gain (BNG) in line with the relevant NPS (secured through Requirement 14 of the **draft DCO** [**PEPD-009**]. The Overarching National Policy Statement for Energy (EN-1) published in 2011 remained at the time of DCO Application and therefore does not include a statement regarding BNG. The replacement for this NPS ('draft EN-1'), published in March 2023 contains a statement encouraging applicants to deliver BNG (see paragraph 4.5.5, of **Appendix 22.15: Biodiversity Net Gain, Volume 4** of the ES **[APP-193]**) measured using the most current version of the Department for Environment, Food and Rural Affairs (Defra) and Natural England

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		(2023) biodiversity metric. It also recommends delivery of BNG in a manner that best contributes to the achievement of wider strategic outcomes for biodiversity (as described in a Local Nature Recovery Strategy where available). As a result of this, it is clear that Rampion 2 is not currently mandated to provide BNG based on a Development Consent Order Application (DCO) in 2023. However, this Applicant is seeking to deliver a renewable energy project that provides a positive legacy for the environment, both through delivery of low carbon electricity and by mitigating and compensating for the effects associated with construction and operation. As part of this effort, the Applicant is making a commitment, to be secured through a requirement within the DCO, to deliver a BNG for onshore habitats of at least 10% in order to deliver a positive outcome for biodiversity.
NSB11.10	We strongly disagree with the Applicant's assessment that there will be little or no significant impact on biodiversity in the Oakendene and northern cable route area and will address this concern in detail in the written representation. In addition, for some of the impacts, they have classed as moderate or not significant things they had given greater significance to in Rampion 1. The proposed development interrupts or compromises existing wildlife corridors here, and more widely affects planned biodiversity connectivity corridors such as the Weald to Wave.	The assessment provided in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement (ES) **[APP-063]** is not simply based on the presence on habitats and species, rather it is focused on potential pathways of effect that construction and/or operation and maintenance effects may pose to terrestrial ecological features. For example, nightingale are identified as being present on or close to the in **Appendix 22.13: Breeding bird survey, Volume 4** of the ES **[APP-191]** however, the trenchless crossings (TCs) TC-25 and TC-26 are in place to minimise losses of wet scrub, watercourses (Cowfold stream and a tributary of it) and meadow habitat (bordering the scrub) that this species is using. Although there will be loss of hedgerow and scrub between the A281 and the onshore substation at Oakendene, it is restricted and in locations that are less likely to support nightingale. This reduction leaves the potential for disturbance to reduce productivity of individual pairs of nightingale. Based on areas where density of nightingale are high (e.g. active Ministry of Defence training facilities at Lodge Hill, Kent and Wakering Stairs, Essex) and levels of potential disturbance are great (including active artillery ranges) temporary construction disturbance (which will move rapidly along the onshore cable route) is not considered to be of particular concern for the temporary construction activities associated with the installation of onshore cable corridor for Rampion 2.
NSB11.11	The State of Nature report highlights the plight of the UK's wildlife. It cannot be sensible to destroy what we will demonstrate in the written representation to be a highly sensitive, yet undesignated area of particular significance and importance, around the substation location, containing flood meadows, a high density of nightingale breeding sites, 8 of the 14 Important Hedgerows across the entire Proposed Development, reptile habitats and many red list species. In several instances this is the only place where some of these endangered species are to be found.	As stated above in response to **reference NSB11.1** above, **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** describes the alternatives studied by the Applicant and a comparison of their environmental effects across the project as a whole. This includes the alternatives considered and consulted on prior to the DCO Application. As described in **Chapter 3 Alternatives, Volume 2** of the ES **[APP-044]**, the Proposed Development has been developed through a multi-disciplinary design process including environment, engineering, landowner, and cost considerations. The Applicant has sought to avoid, reduce, or minimise negative effects through the design process and also by identifying and securing embedded environmental measures. Following the Scoping stage, the design was further refined to develop the Proposed Development that was assessed in the first Statutory Consultation exercise (RED, 2021). Numerous onshore cable routeing options were considered to avoid as many environmental sensitivities as possible, and some alternative options were included. Following the first Statutory Consultation exercise, alternatives and modifications were identified taking account of consultation responses. Changes to the onshore cable route, were described in full in the supporting document to the subsequent second Statutory Consultation (RED, 2022) and third Statutory Consultation (RED, 2023a)). The consideration of responses to consultation is

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		presented in the **Consultation Report** **[APP-027]**. This process resulted in the consideration of reasonable alternatives reported in **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** and the refinement to the final proposed DCO Order Limits.
NSB11.12	The fact that it is proposed on an area which floods, contains a huge range of biodiversity and acts as a massive carbon store, makes achieving biodiversity net gain challenging. Based on Rampion 1's poor track record regarding re-planting, (as highlighted by SWT, SDNP and Bolney PC), numerous breaches of the DCO requirements, which caused pollution and contamination, and now regular flooding from Rampion 1 in an area which did not flood before (Bolney PC report), there is a real danger of long-term damage and polluting the watercourses which feed the River Adur.	As stated above in response to **reference NSB11.1** above, **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** describes the alternatives studied by the Applicant and a comparison of their environmental effects across the project as a whole. This includes the alternatives considered and consulted on prior to the DCO Application. As described in **Chapter 3 Alternatives, Volume 2** of the ES **[APP-044]**, the Proposed Development has been developed through a multi-disciplinary design process including environment, engineering, landowner, and cost considerations. With regard identifying that there are no reasonable alternatives, The Applicant has sought to avoid, reduce, or minimise the negative effects through the design process and also by identifying and securing embedded environmental measures. Following the Scoping stage, the design was further refined to develop the Proposed Development that was assessed in the first Statutory Consultation exercise (RED, 2021). Numerous onshore cable routeing options were considered to avoid as many environmental sensitivities as possible, and some alternative options were included. Following the first Statutory Consultation exercise, alternatives and modifications were identified taking account of consultation responses. Changes to the onshore cable route, were described in full in the supporting document to the subsequent consultation exercises: second Statutory Consultation exercise (RED, 2022), and third Statutory Consultation exercise c(RED, 2023a), and the fourth Statutory Consultation exercise (RED, 2023b). This process resulted in the consideration of reasonable alternatives reported in **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** and the refinement to the final proposed DCO Order Limits.
NSB11.13	It is an incomprehensible choice of location, given the damage that it will cause economically, environmentally and socially. We will be submitting further evidence to show that the Applicant has seriously downplayed the impacts on this community, traffic, local businesses and unique habitats and red listed species. We will argue that the visual impacts are far more significant than stated by Rampion, and they have not listened to/taken into account key evidence from local residents. Nor have they properly considered the alternative locations for the substation. We also believe that so many aspects of the proposals have changed so significantly from those of the original consultation as to warrant a reopening of the consultation	The Applicant has no further comments on this matter at this time.
NSB11.14	We associate ourselves with the submissions made by PCS alliance, and would like the opportunity to participate in the pre-examination hearing and the issue specific hearings. We kindly request a site visit to Oakendene and an issue specific hearing at Cowfold Village Hall to look at the impacts of this choice of substation site on Cowfold, its residents, economy and environment.	The Applicant has submitted an updated **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** at the Pre-Exam Procedural Deadline on 16 January 2024. Paragraph 4.9.1 in Section 4.9 of the updated **Outline CTMP** **[PEPD-035a]** includes the clarification that Light Goods Vehicles (LGVs) refers to Goods Vehicles which are less than 3.5 tonnes (T) and Heavy Goods Vehicles (HGVs) refers to Good Vehicles that are heavier than 3.5 T.
NSB11.15	Appendix: Document Omissions, errors and conflicting statements: PINS have highlighted, in advice notes to Rampion, a number of discrepancies and omissions in	For clarification, the Applicant would like to note Figure 7.6.6c showing local access routes, Figure 7.6.9c showing routes from compounds to sites and Figure 7.6.13c showing Light Goods Vehicle (LGV) construction access routes in the **Outline CTMP** **[PEPD-035a]** have

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	the DCO submission, which they felt needed to be resolved before beginning the registration process. In looking at just a few of the documents submitted by Rampion, and concentrating only on subjects directly related to Cowfold, we have found a number of other anomalies and inaccuracies which also need to be dealt with before proceeding to the Examination stage. We believe this lack of attention to detail is likely to be indicative of failings throughout the documents and as such they are not fit for purpose.	been updated at the Deadline 1 submission to reflect that construction traffic will not use Kent Street south of access A-61 and A-64.
NSB11.16	Light goods vehicles: The term LGV is referred to throughout the documents as Light Goods Vehicles and mention is made of private cars, minibuses and white vans. However, it would seem from table 4-4 from Doc Ref 7.6 that this may in fact indicate vehicles under 7.5T. The first item under HGVs refers to vehicles over 7.5T. Smaller trucks are not expressly listed at all and therefore the implication is that trucks UNDER 7.5T are to be considered LGVs. Indeed, this would be consistent with the official change in definition of LGV in 1992 to Large Goods Vehicle. This difference has huge implications for the residents of Kent Street and for those living in the vicinity of the haul road as a result of the proposals for LGVs to bypass the AQMA in Cowfold. An email from Chris Tomlinson on 11th October clarifies the definition of LGV, "The definition as set out in the Environmental Statement is applicable to all our assessments and tables; LGV refers to Light Goods Vehicles that are less than 3.5t. HGVs are goods vehicles heavier than 3.5t.". However, as yet, no amendment to Table 4-4 has been made.	The Applicant has submitted an updated **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** Procedural Deadline A and a subsequent update has been provided at Deadline 1. The duplication in Table 6-2 within the **Outline CTMP** **[PEPD-035a]** has been amended and Table 6-2 now includes the unaccounted for access points.
NSB11.17	Circular routes in Section 3: In the Outline construction Management Plan (Outline CTMP), Table 6-2, figure 7.6.13c and figure 7.6.6c appear to contradict each other. In table 6-2 there is a clear intention to use Kent Street, via access from the north, and to continue through to the haul road and to Wineham lane. 7.6.13c shows a route from Wineham Lane to an isolated spot in the south part of Kent Street, not apparently connected to the cable route and no obvious through route down Kent Street is shown at all from the North. And 7.6.6c shows all kinds of movements to the west of Cowfold in and out of the AQMA	The Applicant has submitted an updated **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]** at Procedural Deadline A and a subsequent update has been provided at Deadline 1. Reference to Wineham Lane (South of A272 – accesses AA-67 and AA-68 in Table 5-2 (Avoidance of narrow rural roads (single track roads)) within the **Outline CTMP** **[PEPD-035a]** has now been removed.
NSB11.18	Duplication of Table 6-2: The second half of this table appears to be a duplication of the first 2 pages. It is not clear whether this is simply a duplication and needs to be removed, or whether in fact further, necessary, information has been omitted as a result of the duplication. In addition, not all access points seem to be accounted for.	H520b is shown as having a 75m loss – this distance being specified based on engineering input regarding access. In addition to this **Appendix 22.16: Arboricultural Impact Assessment (AIA), Volume 4** of the ES **[APP-194]** considered the visibility splay detail that was provided as part of the proposed substation design. This dictates the likely removal of 132m of hedgerow (H77 in the AIA). The difference in the numbering systems between the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** and the **Appendix 22.16 Arboricultural Impact Assessment (AIA), Volume 4** of the ES **[APP-194]** is a function of two different surveys methods used by the respective disciplines of Arboriculture and Ecology. It is not possible to perfectly align these due to differences in the classification of vegetation under published and industry adopted guidance.
NSB11.19	Use of the term single track lane: There are references in the various DCO documents to 'single track lanes such as Wineham Lane and Kent Street'. Whilst technically, it	**Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** presents an assessment of air quality impacts from construction traffic. The assessment concludes that the Proposed Development

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Ref	Relevant representation comment	Applicant's response
	might be true to call Wineham Lane a single-track Lane as it has no white line down the centre, it is in fact of similar width to the A272, a major road, and does not require passing places for the traffic to pass in both directions. Kent Street however is truly a narrow single track lane, quite unsuitable for HGV use. It is misleading to equate the two	will not result in significant effects on air quality, as a result of increased traffic on the local road network. An air dispersion traffic modelling study of the potential impacts on the Cowfold Air Quality Management Area (AQMA) is presented in Section 1.4 within **Appendix 19.1: Full results of construction road traffic modelling, Volume 4** of the ES **[APP-174]** with the assessment in **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]** concluding that there are no significant effects (please also see response above **reference NSB11.3**). The **Outline Construction Traffic Management Plan (CMTP)** **[PEPD-035a]** (secured via Requirement 24 in the **Draft DCO** **[PEPD-009]** details the routing of heavy goods vehicles (HGVs) during the construction phase of the Proposed Development. The **Outline CTMP** **[APP-254]** is underpinned by commitment C-158 of the **Commitment Register** **[APP-254]** which states proposed heavy goods vehicle (HGV) routing during the construction period to individual accesses with avoid the AQMA in Cowfold where possible. It is anticipated that other traffic (non-HGV) will use part of the road network in Cowfold and this was reflected in the air quality assessment presented **Chapter 19: Air quality, Volume 2** of the ES **[APP-060]**.
NSB11.20	Hedges: Regarding the hedge map, (Outline CoCP, Doc ref 7.2 figure 7.2.1k) a large part of H520 is apparently to be retained or notched. Only section H520 b is to be removed. How can this be compatible with the need to create a bell mouth and visibility splay large enough to comply with the regulations for the 60mph A272? Indeed, conflictingly, Trees map 7, taken from the Arboricultural Impact Assessment (DR 6.4.22.16) clearly shows that large parts of it WILL in fact b e removed. Also confusingly, the hedge numbering appears to be different between these two maps.	The Applicant has provided an updated version of Appendices 1-5 of the **Consultation Report** **[APP-028]** at the Deadline 1 submission.
NSB11.21	AQMA Cowfold: Consultation Report (DR 5.1.3) p240: "In addition, Chapter 23: Transport, Volume 2 of the ES (Document Reference: 6.2.23) presents the methodology and calculation of construction traffic, confirming that no traffic will be routed through the Cowfold AQMA" But: outline CoCP DR 7.2 C-158 and Commitments register (DR 7.22) both say that the area will be avoided 'where possible' and indeed the maps mentioned above appear to show extensive use of the roads through Cowfold	There are two different types of temporary construction compounds included as part of the Proposed Development. Temporary construction compounds are required for landfall works, trenchless crossings, and logistics (storage of materials and equipment, welfare facilities), all temporary construction compounds are located within the proposed DCO Order Limits and are shown on **Figures 4.3a** to **4.3c, Chapter 4: The Proposed Development – figures, Volume 3** of the Environmental Statement (ES) **[APP-076]**. Five temporary construction compound locations have been identified in the DCO Application and will be in use for approximately 3.5 years. In addition to this, temporary construction compounds for trenchless crossings (HDD compounds) have been identified in the DCO Application these compounds will be in use for approximately 3 – 4 months at each location, and **Appendix 4.1: Crossings schedule, Volume 4** of the ES **[APP-120]**, and **Figures 4.3a** to **4.3u, Chapter 4: The Proposed Development – figures, Volume 3** of the Environmental Statement (ES) **[APP-076]** show the indicative onshore trenchless crossing compounds and trenchless crossing limits of deviation. The temporary construction compounds for form part of Works No. 9 as described in the **Draft Development Consent Order** **[PEPD-009]**.
NSB11.22	Poor quality maps: DR 5.1.1-maps on pp 296-326 meaningless symbols instead of words or letters	Figure 7.6.9c within the **Outline Construction Traffic Management Plan** **[PEPD-035a]** shows the access A-63 will be both for construction and operational phases, this is also shown in Sheet 33, **Onshore Works Plans** **[PEPD-005]**. As described in paragraph 4.1.1 of the **Design and Access Statement** **[AS-003]**, the access will be designed to provide access for Abnormal Indivisible Loads (AIL) and this function will be retained during the operation and maintenance phase in order to allow for any AILs required.

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Ref	Relevant representation comment	Applicant's response
		Paragraph 23.3.46 within **Chapter 23: Transport, Volume 2** of the ES **[APP-064]** describes that following consultation responses the main construction access and permanent access to the onshore substation site will be from the A272 only (not via Kent Street) details of which are set out in the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]**. Kent Street remains proposed for use as a temporary construction access (A-61 and A-64) for onshore cable corridor works only. Environmental measures will be implemented to manage the potential effects from construction traffic. These are detailed in the **Outline Construction Traffic Management Plan (CTMP)** **[PEPD-035a]**. The final stage specific CTMP is secured through Requirement 24 of the **Draft DCO** **[PEPD-009]**. During the DCO Application upload, a small number of Figures (maps) were corrupted leading to distorted maps being shown. The Applicant has updated the **Consultation Report** **[APP-028]** to correct this at Deadline 1.
NSB11.23	Smaller compounds: The smaller compounds, for example the one at Cratemans Farm on the haul road between the A281 and Kent Street, are not shown on any maps. This gives a misleading impression of the true impacts of the proposals.	Working hours are stated in Section 4 of **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** and are outlined in Section 4.4 of the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**. Following receipt of Relevant Representations and information shared at Issue Specific Hearing 1, C-22 within the **Commitments Register** **[APP-254]** has been updated at the Deadline 1 submission to the following: '*Core working hours for construction of the onshore components will be 08:00 to 18:00 Monday to Friday, and 08:00 to 13:00 on Saturdays, apart from specific circumstances that are set out in the Outline COCP, where extended and continuous periods of construction are required.* *Prior to and following the core working hours Monday to Friday, a 'shoulder hour' for mobilisation and shut down will be applied (07:00 to 08:00 and 18:00 to 19:00). The activities permitted during the shoulder hours include staff arrivals and departures, briefings and toolbox talks, deliveries to site and unloading, and activities including site and safety inspections and plant maintenance. Such activities shall not include use of heavy plant or activity resulting in impacts, ground breaking or earthworks.'* This has been updated in the **Outline Construction Traffic Management Plan** **[PEPD-035a]** for the Deadline 1 submission and will be updated in the **Outline Code of Construction Practice** **[PEPD-033]** for the next submission of this document. As outlined in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]**, no activity outside these hours (including Sundays, public holidays, or bank holidays) will take place apart from under the following circumstances: • Where continuous periods (up to 24 hours, 7 days per week) of construction work are required for HDD (as HDD is a continuous activity that cannot be paused once started); • for other works requiring extended working hours such as concrete pouring which will require the relevant planning authority to be notified at least 72 hours in advance; • or the delivery of abnormal loads to the connection works, which may cause congestion on the local road network, and will require the relevant highway authority to be notified at least 72 hours in advance; or

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		• as otherwise agreed in writing with the relevant planning authority. Any out of work hours beyond those listed above will be detailed by a Section 61 application of the Control of Pollution Act 1974 with agreement sought by the relevant Local Planning Authority. Commitment C-263 includes the production of a Noise and Vibration Management Plan (NVMP) during detailed design based on the principles in the **Outline CoCP** **[PEPD-033]**, which is secured by Requirement 22 of the **Draft DCO** **[PEPD-009]**.
NSB11.24	Bellmouth at Oakendene (A63): Page A62 of the Outline Construction Traffic Management Plan (Doc Ref 7.6) shows the need for a new temporary construction bellmouth. Yet this access will be for both construction and operation it says. Is this just an error? Is there in fact an alternative proposal to access the site from Kent Street for operational purposes? Is the intention to reduce the bellmouth once construction is completed? How can we comment sensibly on something so potentially important visually when it is so unclear? A verbal statement about this from Vicky Portwain at a meeting on 4th October was to the effect that that the bellmouth was to be reduced after construction to reduce impact. Yet from the Design and Access statement (Doc Ref 5.8) 4.1.1 "A new access (A-63) is required for the onshore substation at Oakendene for both the construction and operation and maintenance phases. This is shown on the plan in Appendix A Oakendene onshore substation - Indicative Layout and Elevation. The access will be designed to provide access for Abnormal Indivisible Loads (AIL) and this function will be retained during the operation and maintenance phase in order to allow for any AILs required."	The **Consultation Report** **[APP-026]**, sets out the numerous rounds of statutory and non-statutory consultation including notices, advertisements and leaflets around the proposed cable route, including the village of Cowfold. Additionally, the Applicant attended a public Q&A session organised by the Parish Council in November 2022, and hosted a public information event in June 2023. Issues pertaining to Cowfold are drawn together from page 35 of the **Consultation Report** **[APP-026]**. **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** describes the alternatives studied by the Applicant and a comparison of their environmental effects across the project as a whole. This includes the alternatives considered and consulted on prior to the DCO Application. As described in **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**, the Proposed Development has been developed through a multi-disciplinary design process including environment, engineering, landowner, and cost considerations. The Applicant has sought to avoid, reduce, or minimise the effects through the design process and also by identifying and securing embedded environmental measures. It is acknowledged that some residual effects remain across the site. The Applicant notes that NPS EN-1 (2011) states there is no "*general requirement to consider alternatives or to establish whether the proposed project represents the best option*". This is reflected in the recently published NPS-EN1 (2023). Paragraph 5.9.10 of NPS (EN-1 (DECC, 2011a) (Draft NPS EN-1 paragraph 5.10.31, DESNZ, 2023a) sets out aspects that the Secretary of State (SoS) should consider when determining whether there are exceptional circumstances that would support the grant of development consent in a National Park. The Applicant has considered the key policy tests in the NPS EN-1 relating to development taking place within the SDNP. The Applicant considers that the Proposed Development is demonstrably in the public interest, that there are exceptional circumstances for granting the Proposed Development, and that the impacts of the Proposed Development on the SDNP are outweighed by the benefits of the scheme (see **Planning Statement** **[APP-036]**). Section 3.6 of **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** provides the information on the onshore substation site selection process. **Section 3.6** describes the site selection process and the reasons for other sites being discounted based on the multi-disciplinary factors identified in the paragraph above. The selection of Oakendene is clearly stated as favourable for engineering, cost, and landowner considerations in paragraphs 3.6.23 to 3.6.25 of **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**. Significant weight was also given to the environmental constraints and related policy in the overall balance of the decision. This Applicant has also developed further embedded environmental measures that have been presented in the application including the design principles in the **Design and Access Statement** **[AS-003]**, **Outline Landscape and Ecology Management Plan** **[APP-**

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Ref	Relevant representation comment	Applicant's response
		232] and **Outline Operational Drainage Plan [APP-223]** secured via Requirements 8, 12, and 17 of the **Draft DCO [PEPD-009]** respectively.
NSB11.25	• Core working hours exceptions: The list of exceptions to the core working hours is far more extensive in the Outline CTMP (Doc ref 7.6) than in 6.4.23.2 p39 , 6.2.23 or 7.2 and includes highways delays as an acceptable reason to extend the core working hours. This is not mentioned in the other documents, nor is the intention to allow an extra hour either side to allow workers to reach, and return from, the areas they are working in. This lack of clarity allows Rampion to adjust what is agreed to suit themselves unless it is addressed. Indeed, even the proposed core hours are unacceptable to residents. An email from Chris Tomlinson on 29th October indicates that they will make the necessary changes to any omissions and errors "prior to the Preliminary Meeting at the start of the DCO examination." This is far from the wishes of the Planning Inspectorate to make all alterations before opening the registration and is far too late for people to make informed comments about the new documents.	The Applicant has undertaken an Environmental Impact Assessment (EIA) which considers and assesses the likely significant effects of the Proposed Development on social, economic, and environmental well-being. The **Environmental Statement (ES) Volume 2** [**APP-042** to **APP-072**], and **Volume 4** [**APP-120** to **APP-222**], reports the findings of the EIA. The ES also provides information about the Proposed Development including its context, a full description of the Proposed Development and its construction, the main alternatives considered, the consultation process that was part of the EIA, and any relevant technical information that has been used to assess the likely significant effects of the Proposed Development. The ES and includes a series of chapters that consider and assess the likely significant effects of the Proposed Development in relation to each relevant environmental aspect. Further information has been submitted into the Examination as outlined in the Pre-Exam Procedural Deadline A submissions on 16 January 2024, this included revisions to address issues raised by the Examining Authority in the Section 51 advice **[PD-002]** and requests made in the Rule 6 letter **[PD-006]**, further assessment work undertaken since the DCO Application submission (such as the supplementary geophysical survey results), and to capture errors and omissions.

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Table 7-12 Applicant's Response to The Chamber of Shipping [RR-392]

Ref	Relevant representation comment	Applicant's response
NSB12.1	The UK Chamber of Shipping is the trade association for the UK shipping industry, representing some 200 members, operating 900 vessels equalling 18 million GT in capacity, trading around the UK and globally. The Chamber represents the full breadth of the industry, including dry and wet trades, passenger transport (cruise & ferry), offshore supply and construction, towage and specialist, as well as professional service providers with shipping interests. The Chamber fully supports the Government's obligations to achieve Net Zero Carbon by 2050 and welcomes the development of offshore renewable energy to succeed. The ports and shipping industries play an essential in enabling those targets to be achieved by providing bases and vessels for construction, operation & maintenance, and decommissioning. The Chamber also asserts that the planning process and framework must support both the UK's offshore renewable goals for decarbonisation and the wider shipping industry to ensure that navigational safety is not compromised nor economic contribution from the shipping industry jeopardised, as stated within Paragraph 2.6.162 of NPS EN-3. The Chamber seeks to ensure navigational safety is upheld and that developments are appropriately positioned to enable existing and future commercial navigation to continue safely and efficiently. Shipping is the greenest form of cargo transport and proposed offshore renewable developments must take fully into consideration the routeing and operations of commercial shipping to enable this to continue. The Chamber has been closely involved in the planning process for Rampion 2 prior to DCO application, through PEIR, Hazard Workshops and the NRA, advocating for enhanced mitigation measures for navigation safety and environmental efficiency of commercial shipping.	The Applicant welcomes The Chamber of Shipping's support of the development of offshore renewable energy. Paragraph 2.2.28 of NPS EN-1 (DECC, 2011a), extant at the time of submission of the DCO Application and against which it will be tested, outlines that the NPS takes full account of the objective to contribute to the achievement of sustainable development. Paragraph 2.6.3 of NPS EN-1 (DESNZ, 2023a) (published in November 2023) which took effect in January 2024, and is a relevant consideration in the decision-making process, also states that the NPS takes full account of the objective to contribute to the achievement of sustainable development (in a similar manner to paragraph 2.2.28 of NPS EN-1 (DECC, 2011a)), whilst paragraph 2.6.5 states that the UK Government believes that the NPSs provide policies that both respect the principle of sustainable development and can facilitate the consenting of energy infrastructure at the scale required. The Applicant considers that the Proposed Development represents sustainable development in accordance with the NPSs outlined above. A NPS review document (**Statement on the new National Policy Statements for Energy** (document reference 8.29)) has been submitted at Deadline 1 to provide a comparison of significant changes between the draft NPSs of March 2023 against the NPS as subsequently designated by Parliament in January 2024. The range of assessments in **Chapter 6: Coastal processes, Volume 2 [APP-047]** to **Chapter 29: Climate change, Volume 2 [APP-070]** of the Environmental Statement (ES) demonstrate how the Applicant has taken into account how the Proposed Development would affect social, economic and environmental well-being. The Applicant considers that the Proposed Development represents sustainable development. Section 104 of the Planning Act 2008 outlines that the DCO Application must be decided in accordance with the relevant NPS (in this case: NPS EN-1 (DECC, 2011a), NPS EN-3 (DECC, 2011b) and NPS EN-5 (DECC, 2011c) with NPS EN-1 (DESNZ, 2023a), NPS EN-3 (DESNZ, 2023b) and NPS EN-5 (DESNZ, 2023c), that came into force in 2024, relevant considerations in the decision-making process) unless (inter alia) the adverse impacts of a proposal would outweigh its benefits. Section 5.4 of the **Planning Statement [APP-036]** summarises the potential environmental, social and economic benefits and the adverse impacts of the Proposed Development drawing on relevant information in line with NPS EN-1. Section 5.5 of the **Planning Statement [APP-036]** sets out the planning balance where the potential benefits and impacts of the Proposed Development are weighed up. Although, inevitably, there are adverse impacts associated with the scale and type of infrastructure that forms the Proposed Development, the Applicant considers that the planning balance is firmly in favour of the Proposed Development and the benefits outweigh the adverse impacts.

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Table 7-13 Sussex Inshore Fisheries and Conservation Authority [RR-380]

Ref	Relevant representation comment	Applicant's response
2.38.1	**General comments**	**Chapter 5: Approach to the EIA**, **Volume 2** of the ES **[APP-046]** states that where the design is still evolving, a precautionary approach has been applied to ensure a maximum design scenario which represents the worst-case scenario for each aspect is assessed in the ES. This approach has been adopted in line with the Planning Inspectorate Advice Note Nine: Rochdale Envelope (Planning Inspectorate, 2018), and is further described in **Chapter 4: Proposed Development**, **Volume 2** of the ES [**APP-045**] in paragraphs 4.1.4 to 4.1.6. The use of the Rochdale Envelope approach is recognised in paragraph 4.2.8 of NPS EN-1 (2011), and is also reflected in the newly designated NPS (Department of Energy Security and Net Zero 2023a; 2023b and 2023c). During the Benthic Ecology and Fish Ecology Expert Topic Meeting (ETG) Meeting on 24 March 2021, Sussex Inshore Fisheries and Conservation Authority (IFCA) stressed that site-specific fish and shellfish surveys were considered more appropriate than solely relying on desk-based studies to inform the baseline, but ultimately deferred to their statutory authority colleagues on this matter (Marine Management Organisation (MMO) and Centre for Environment, Fisheries and Aquaculture Science (Cefas)). Agreement of no additional fish and shellfish surveys required for the Proposed Development was confirmed with these bodies. As part of the Evidence Plan Process (EPP), it was agreed with the fish and shellfish ETG that adequate information had been provided for the baseline characterisation, and with the exception of black seabream, further fish and shellfish surveys were not considered necessary for the assessment. Site specific geophysical surveys were conducted across the entire proposed DCO Order Limits, which allows the consideration of likely distribution of black seabream nests, and nesting habitat potential outside the Kingmere Marine Conservation Zone (MCZ) based on seabed characteristics (Section 8.6, paragraph 8.6.82 to 8.6.84 of **Chapter 8: Fish and shellfish ecology, Volume 2** of the ES **[APP-049]**). The site-specific surveys complement long term black seabream nest distribution data collected within the export cable corridor, Kingmere Marine Conservation Zone (MCZ) and the nearfield Zone of Influence (ZOI) to inform licensing decisions for the aggregate industry, black seabream catch and release data, and regional geological data, the composite of which is described in this chapter and completes a comprehensive baseline characterisation fit for the purposes of environmental impact assessment (EIA).
2.38.2	**General comments**There is a high level of uncertainty regarding the proposed development, due to the extended use of the Rochdale Envelope. This makes it challenging to pass meaningful comments on mitigation measures for installation techniques. Therefore, there is little certainty of the actual environmental impacts of the project and how the developer will mitigate these impacts. **Chapter 8: Fish and Shellfish Ecology**	Impacts to black seabream arising from all of the noted sources (underwater noise, suspended sediment, direct disturbance, and long-term loss of habitat) are assessed in Sections 8.9, 8.10, and 8.11 of **Chapter 8: Fish and shellfish ecology, Volume 2** of the ES **[APP-049]**. Embedded mitigation to reduce the magnitude of impacts from underwater noise, suspended sediment, direct disturbance and habitat loss have been detailed in Table 8-13 of **Chapter 8: Fish and shellfish ecology, Volume 2** of the ES **[APP-049]**. The Applicant has committed to pre-construction surveys to inform micro-siting in Rampion 2

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Ref	Relevant representation comment	Applicant's response
	Through the ETG process Sussex IFCA stressed that site-specific fish and shellfish surveys were considered more appropriate than solely relying on desk-based studies to inform the baseline assessment. Sussex IFCA remain concerned about the lack of up-to-date site-based survey data and the age of the baseline datasets utilised.	Technical Note: **Cable Corridor area mitigation for sensitive features** (**Appendix D Documents Submitted via the Evidence Plan, Evidence Plan [APP-243]**), (in accordance with Schedule 11 and 12, Condition 16 of the **draft DCO [PEPD-009]**). The Applicant has set out its commitments to the use of noise abatement mitigation during sensitive periods for the protection of sensitive receptors, including black seabream, within Rampion 2 Technical Note: **Cable Corridor area mitigation for sensitive features** (**Appendix D Documents Submitted via the Evidence Plan, Evidence Plan [APP-239]**), which is secured via Schedule 11, Part 2 11 (k) and Schedule 12, Part 2 11 (k) of the **Draft DCO [PEPD-009]**. The proposed noise threshold will be informed by the site-specific ambient noise surveys in order to ensure a relevant threshold for the area. **Appendix 8.4: Black Seabream Underwater Noise Technical Note and Survey Results - Revision A, Volume 4** of the ES **[PEPD-023]** has been submitted to the Examination at the Pre-Exam Procedural Deadline A on 16 January 2024 and subsequently published on the PINS website.
2.38.3	**Black seabream** Sussex IFCA have had serious concerns regarding the likelihood of significant impacts to black seabream during the construction, operation, and maintenance of Rampion 2. The proposed mitigation from sedimentation and noise generation has alleviated some of these concerns however, pre-construction site-specific surveys are needed to inform micro-siting of all elements of construction to minimise the environmental impact. The Authority would also welcome clarity around how the Applicant will be held accountable on any commitments made at this stage in the process. The Authority has concerns about the impact of underwater noise in relation to disturbance of black seabream and would like to see a commitment to noise abatement technology during the nesting season. The threshold for disturbance of breeding black seabream is unknown, therefore we suggest a baseline of background noise occurring during a successful nesting season is used to inform a suitable target for noise abatement mitigation to achieve.	The Applicant considers the assessment of potential noise impacts to herring spawning grounds presented in **Chapter 8: Fish and shellfish ecology, Volume 2** of the Environmental Statement **[APP-049]** is appropriate and adequate. As there is no overlap with the spawning ground of piling noise at a level that will disturb spawning adults (186 dB SELcum) at the recognised spawning ground and no overlap of noise at injurious levels (210 dB SELcum) intersecting areas of high larval abundance, the Applicant is confident that there will be no disturbance to spawning herring. On this basis, there is no requirement for a seasonal restriction on piling at the Proposed Development site for the protection of herring. Notwithstanding the above, the Applicant has committed to the implementation of a least one offshore piling noise mitigation technology deliver underwater noise attenuation to reduce predicted impacts to all sensitive receptors, including spawning herring (commitment C-265 in the **Commitments Register [APP-254]** which has been updated and submitted at Deadline 1).
2.38.4	**Herring** The impacts from underwater noise to herring is still a serious concern to Sussex IFCA. Herring are deemed highly sensitive, due to a combination of their restricted habitat requirements (they spawn directly onto the seabed) and their sensitivity to underwater sound over large distances. The Authority recommends a seasonal piling restriction to limit disturbance to spawning populations during the spawning season (November-January) or methods such as bubble curtains. The Authority welcomes the opportunity to submit further comments during the examination of the application and wishes to support RWE in determining the scope of the conditional mitigation, the temporal and spatial restrictions together with monitoring requirements of the marine licence. It is important that developments like Rampion 2 should not compromise the Sussex IFCA's ability to maintain and promote sustainable fisheries and protection of the marine environment within the region.	**Chapter 5: Approach to the EIA**, **Volume 2** of the ES **[APP-046]** states that where the design is still evolving, a precautionary approach has been applied to ensure a maximum design scenario which represents the worst-case scenario for each aspect is assessed in the ES. This approach has been adopted in line with the Planning Inspectorate Advice Note Nine: Rochdale Envelope (Planning Inspectorate, 2018), and is further described in **Chapter 4: Proposed Development**, **Volume 2** of the ES [**APP-045**] in paragraphs 4.1.4 to 4.1.6. The use of the Rochdale Envelope approach is recognised in paragraph 4.2.8 of NPS EN-1 (2011), and is also reflected in the newly designated NPS (Department of Energy Security and Net Zero 2023a; 2023b and 2023c). During the Benthic Ecology and Fish Ecology Expert Topic Meeting (ETG) Meeting on 24 March 2021, Sussex Inshore Fisheries and Conservation Authority (IFCA) stressed that site-specific fish and shellfish surveys were considered more

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Ref	Relevant representation comment	Applicant's response
		appropriate than solely relying on desk-based studies to inform the baseline, but ultimately deferred to their statutory authority colleagues on this matter (Marine Management Organisation (MMO) and Centre for Environment, Fisheries and Aquaculture Science (Cefas)). Agreement of no additional fish and shellfish surveys required for the Proposed Development was confirmed with these bodies. As part of the Evidence Plan Process (EPP), it was agreed with the fish and shellfish ETG that adequate information had been provided for the baseline characterisation, and with the exception of black seabream, further fish and shellfish surveys were not considered necessary for the assessment. Site specific geophysical surveys were conducted across the entire proposed DCO Order Limits, which allows the consideration of likely distribution of black seabream nests, and nesting habitat potential outside the Kingmere Marine Conservation Zone (MCZ) based on seabed characteristics (Section 8.6, paragraph 8.6.82 to 8.6.84 of **Chapter 8: Fish and shellfish ecology, Volume 2** of the ES **[APP-049]**). The site-specific surveys complement long term black seabream nest distribution data collected within the export cable corridor, Kingmere Marine Conservation Zone (MCZ) and the nearfield Zone of Influence (ZOI) to inform licensing decisions for the aggregate industry, black seabream catch and release data, and regional geological data, the composite of which is described in this chapter and completes a comprehensive baseline characterisation fit for the purposes of environmental impact assessment (EIA).

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Table 7-14 Applicant's Response to The Woodland Trust [RR-393]

Ref	Relevant representation comment	Applicant's response
NSB14.1	The Woodland Trust is the UK's leading woodland conservation charity, aiming to protect native woods, trees and their wildlife for the future. We own over 1,000 sites across the UK, covering over 30,000 hectares and we have over 500,000 members and supporters. We are an evidence-led organisation, applying existing policy and using expertise to assess the impacts of development on ancient woodland and ancient and veteran trees. Our representation is based on a review of the information provided as part of this Development Consent Order submission. The Trust's interest in this project relates to potential impacts to ancient woodland and veteran trees. We have maintained concerns around the impact of this project for some time now and participated in the developer's public consultations to make our concerns known. We acknowledge that the applicant has reduced the overall impact of the scheme, however some concerns still remain in respect of this irreplaceable habitat, and we would welcome being able to respond further at written representation stage. We note that four ancient woodlands will be subject to trenchless crossings, and therefore we would ask that further information is provided outlining whether any potential indirect impacts to ancient woodlands are anticipated, such as access to the woodlands for maintenance and whether any soil disturbance might be required in the future. Ancient woodlands are irreplaceable habitats and therefore we would hold serious concerns about any potential degradation or detrimental impact to facilitate the scheme. Furthermore, we would request that a commitment is secured regarding protection of the veteran trees within proximity to the proposals (including appropriate buffer zones for T367 and T1199 during the proposed works). Development within the buffer zone of veteran trees can result in damage to the trees' root system and rooting environment, so it is imperative that protection in line with Natural England/Forestry Commission's standing advice is secured. Thank you for this opportunity to provide comment and we look forward to engaging in the proposals further.	The value and protection of ancient woodland is recognised in the **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]** and reflected in the design of the Proposed Development which has evolved to avoid the requirement for any loss or disturbance of this habitat. Commitment C-216 of the **Commitments Register** **[APP-254]** is secured via Requirements 22 and 23 of the **Draft DCO** **[PEPD-009]** and states that '*Where ancient woodland is crossed via trenchless crossing a depth of at least 6m below ground will be maintained to avoid root damage and drill launch and retrieval pits will be at least 25m from the woodland edge. All ancient woodland will be retained with a stand-off of a minimum of 25m from any surface construction works. Construction traffic may operate within 25m of an ancient woodland on existing tracks should any track maintenance works be restricted to the current width*.' The proposed 25m stand-off is substantially more than the 15m minimum recommended by Natural England and Forestry Commission Standing Advice (2022). It is notable that operational access routes do occur close to or through ancient woodland using existing tracks. There is no proposed works on these access routes and they would be used infrequently (i.e. once or twice per year) by a light van or 4x4; therefore no damage to ancient woodland would be expected. Further, the cable is being installed within ducts so that any faults that may require cable repair can be made by pulling the cable back through to the closest joint bay as opposed to digging out from above. In accordance with the recommendations of the **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES **[APP-194]** and Natural England and Forestry Commission Standing Advice (Natural England and Forestry Commission, 2022), Commitment C-174 of the **Commitments Register** **[APP-254]** is secured via Requirement 22 of the **Draft DCO** **[PEPD-009]** and states that '*Veteran trees are retained through design avoidance. Ground works within a buffer zone of 15 times the diameter of the tree or 5m from the edge of the tree's canopy will be avoided'* which will form part of the detailed design.

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Table 7-15 Applicant's Response to BNP Paribas Real Estate (BNP Paribas Real Estate) on behalf of Royal Mail (Royal Mail) [RR-330]

Ref	Relevant representation comment	Applicant's response
NSB15.1	Royal Mail (RM) does not have an in principle objection to the Rampion 2 Offshore Wind Farm DCO proposal but is seeking to secure mitigations to protect its operations during the construction and operational phases. Under section 35 of the Postal Services Act 2011 (the "Act"), RM has been designated by Ofcom as a provider of the Universal Postal Service. RM is the only such provider in the United Kingdom. The Act provides that Ofcom's primary regulatory duty is to secure the provision of the Universal Postal Service. Ofcom discharges this duty by imposing regulatory conditions on RM, requiring it to provide the Universal Postal Service. The Act includes a set of minimum standards for Universal Service Providers, which Ofcom must secure. The conditions imposed by Ofcom reflect those standards. RM is under some of the highest specification performance obligations for quality of service in Europe. Its performance of the Universal Service Provider obligations is in the public interest and should not be affected detrimentally by any statutorily authorised project. RM's postal sorting and delivery operations rely heavily on road communications. RM's ability to provide efficient mail collection, sorting and delivery to the public is sensitive to changes in the capacity of the highway network. RM is a major road user nationally. Disruption to the highway network and traffic delays can have direct consequences on RM's operations, its ability to meet the Universal Service Obligation and comply with the regulatory regime for postal services thereby presenting a significant risk to RM's business. The A27 and A24 are important routes used by RM's national and local collection, distribution and delivery operations. RM has four operational facilities within 2.2 km, including Arundel, Littlehampton and Storrington Delivery Offices. Every day, in exercising its statutory duties RM vehicles use all the other main roads that may potentially be affected by additional traffic arising / delays during construction and operation of this scheme. Any road disruption / closures, night or day, has potential to impact operations. Highway works and Traffic Management for this scheme risk impact on and delays to RM's operations. RM does not wish to stop or delay this scheme from being constructed but does wish to protect its future ability to provide an efficient mail sorting and delivering service. To do this, RM requests that: 1. the DCO includes specific requirements that during the construction phase RM is notified by Rampion Extension Development Limited or its contractors at least one month in advance of any proposed road closures / diversions / alternative access arrangements, hours of working, and on the content of the final CTMP, 2. the final CTMP includes a mechanism to inform major road users (including RM) about works affecting the local highways network (with particular regard to RM's distribution facilities near the DCO application boundary), and 3. RM can join any highways / traffic management consultation group that is set up. RM reserves its position to object to the DCO application if the above requests are not adequately addressed.	Section 8.4 within the **Outline Construction Traffic Management Plan [PEPD-035a]** has been updated and submitted at the Deadline 1 submission to include a section on the communication strategy which outlines that road users are to be notified of any proposed road closures, diversions, and/or alternative access arrangement at least one month prior to commencement. This includes stakeholders directly affected such as Local Planning Authorities and Parish Councils and bodies identified as Statutory Consultees (e.g. National Highways and Royal Mail).

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Table 7-16 Applicant's Response to NATS [RR-264]

Ref	Relevant representation comment	Applicant's response
NSB16.1	NATS raised an OBJECTION to the development at pre-planning due to the impact to our radar at Pease Pottage. We are working with the developer and hope to be able to find a mutually acceptable mitigation.	The potential impact of the Proposed Development to NATS radar at Pease Pottage is addressed in the **Chapter 14: Civil and military aviation, Volume 2** of the Environmental Statement **[APP-055]**. Consultation with NATS has indicated that mitigation would be possible to reduce the impact on radar and Air Traffic Control Centres (ATCs). Considering recent communication from NATS confirming the availability of a Radar Mitigation Scheme for Rampion 2, RED is looking into enter commercial agreements with NATS to implement the radar mitigation.

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Appendix 1
ClimateXChange (2012)

climate change

Scotland's centre of expertise connecting climate change research and policy

The Impact of Wind Farms on Scottish Tourism

Elizabeth Dinnie, The James Hutton Institute

Enquiry received May 2012 for response by end September2012

Enquirer: The Scottish Government Renewables Team

1. Key Points

- The main source of data on the impact on tourism of wind farms in Scotland is the 2008 Moffat Report[1] which focused on four geographical regions in Scotland[2].
- Our analysis of recent tourism data on visitor numbers and spend in regions comparable to the four Moffat Report regions presents a mixed picture. However, there is no evidence to suggest that subsequent wind farm development in these areas has had an adverse effect.
- A 2012 UK survey[3] of tourists' attitudes to wind farms found that:
  - 80% of UK respondents, and 83% of Scottish respondents said their decision on where to visit or where to stay would not be affected by the presence of a wind farm;
  - 52% of all respondents disagreed that wind farms spoil the look of the UK/Scottish countryside, with a further 29% neither agreeing nor disagreeing.
- Our conclusion is that there is no new evidence to contradict the earlier findings that wind farms have little or no adverse impact on tourism in Scotland.

2. Introduction

The point of reference for the impact of wind farms on tourism is the 2008 Moffat Report 'The Economic Impacts of Wind Farms on Scottish Tourism', commissioned by the Scottish Government[4]. This study concluded that even using a worse-case scenario the impact of current applications would be very small, and would be more than balanced by the economic benefits of wind farm development.

Outdoor recreation and landscapes underpin much tourism in Scotland. General sightseeing and exploring the Scottish countryside were important activities done by UK tourists (91% and 73% respectively), and 58% of visitors said that looking at scenery and landscape was an important motivation for their visit[5]. These activities, which include touring and visiting a variety of rural and urban locations, reflect the types of visitors that Scotland receives. Given this movement between places, it is likely that most visitors will see a wind farm at some point in their visit.

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[1] http://www.scotland.gov.uk/Resource/Doc/214910/0057316.pdf

[2] The selection was based on, among other things, the importance of tourism in the areas and the significant number of actual or proposed developments.

[3] http://www.visitscotland.org/pdf/Windfarm%20Consumer%20Research%20final_docUpdatedx.pdf

[4] The 2009 Visitor Attraction Monitor (2010), Moffat Centre for Travel and Tourism Business Development, http://www.moffatcentre.com/media/moffatcentre/documents/visitorattractionreports/vam2009.pdf

[5] Research for Tourism Leadership Group (2012) http://www.visitscotland.org/pdf/Trends%20and%20markets%20report%20for%20Scottish%20tourism%20strategy.pdf

ClimateXChange was asked by the Scottish Government to review evidence published since the Moffat Report and to see what more recent research has to say about the impact of wind farms on tourism in Scotland. This report provides a summary of that evidence.

3. Findings

Tourist Attitudes to Wind Farms

While there are a number of studies looking at public attitudes to wind farms, few of these deal with the specific issue of tourist attitudes towards wind farms[6]. Since 2008 there has been one independent survey and one independent report examining wind farms and tourism. There have also been a number of academic articles.

An independent survey conducted on behalf of VisitScotland in 2011 examined tourists' attitudes to wind farms, and their effect on tourists. The sample population included both UK and Scottish visitors. Participants were asked a number of questions regarding their attitudes to wind farms. The research found that:

- 80% of UK respondents, and 83% of Scottish respondents, said their decision on where to visit or stay **would not** be affected by the presence of a wind farm
- 52% of all respondents **disagreed** that wind farms spoil the look of the UK/Scottish countryside, with a further 29% neither agreeing nor disagreeing
- 40% of UK respondents, and 46% of Scottish respondents, said they would be interested in visiting a wind farm visitor centre
- 43% of all respondents would prefer not to see wind farms in popular tourist areas
- 55% of all respondents **disagreed** that they would avoid an area of the countryside if they knew there was a wind farm there
- Respondents **tended to agree** that 'wind farms are necessary for the future of energy generation' (mean score 7.63)
- Respondents **do not** feel that 'wind farms are an eyesore on the landscape and ruin the tourist experience (mean score 4.63)

In 2012 The Tourism Company[7] conducted a literature review on the impacts of wind turbines on tourism for Anglesey County Council. This report supports the empirical evidence and found that[8]:

- A significant majority of tourists surveyed are largely positive about the generation of energy through wind turbines and are not opposed to it in principle.
- However, a significant minority continue to believe that wind farms have a negative impact on the landscape (between 18-32% depending on landscape).
- There is some evidence that negative responses to actually observing turbines when travelling may be less than when reacting to hypothetical situations.
- In general, studies find little difference in the reaction to wind turbines across the age ranges.

[6] Frantal, B., Kunc, J. (2011) Wind Turbines in Tourism Landscapes: Czech Experience, *Annals of Tourism Research*, 38, 2, 499-519.
[7] http://www.visitscotland.org/research_and_statistics/tourism_topics/wind_farms.aspx, 'The Impact of Wind Turbines on Tourism – A Literature Review' (2012), The Tourism Company, for the Isle of Anglesey County Council.
[8] Worth noting here are the differences of this study compared with the Moffat Report, particularly with regard to the size and number of developments in an area, and the intention to return.

- There was very little difference in the reactions of 'active' (hill walkers, specific outdoor activities) from 'passive' tourists (sightseers, short walks), although active tourists were slightly more likely to suggest that their reaction depended on the location of the turbines.
- There is slightly more acceptance of turbines amongst hill walkers than general tourists, with overseas visitors also being more positive.
- Families are least likely to be affected by wind farms as they have other preoccupations.
- When compared to other structures identified negatively in the landscape (such as pylons, mobile phone masts and power stations) wind turbines came in 8th place.
- There was considerable variation in the effect on future visits with some studies finding almost no effect (96%) and others showing that 18% would not visit an area with a wind farm.
- Landscapes affect acceptance; people marginally prefer wind farms located in farmland rather than more wild places.
- Reaction to wind farm numbers and distribution is varied with some studies showing preference for a number of smaller developments while others indicate large single developments minimise impact.

We have also reviewed the wider academic literature. This tells us that, for most tourists, wind farms are not a major factor in their decision-making and for those who do notice them, most have either a positive or neutral reaction[9]. Even a worst-case scenario estimates that wind farm development has minimal impact on tourism, reducing revenue growth and employment by less than 0.2% by 2015, and this is more than offset by gains made from developing, installing and maintaining wind farms[10]. More visitors seem to associate wind farms with clean energy than landscape damage, suggesting there could be a role in promoting Scotland as an environmentally-friendly country, so long as they are sensitively sited.

A study on Gigha looked at whether extensive wind farm development makes a region less attractive to tourists[11]. The study confirmed that for most tourists the existence of wind farms was not a factor in their decision-making. Although 5% said that turbines in the landscape might make them stay away, this was balanced by those who found the wind farms an added draw.The Moffat Report[12] is the most widely used reference for assessing the impact of wind farms on tourism in Scotland. The research was conducted in 2007 and sought to identify: the potential number of tourists that may come into contact with wind farms; the reactions of those tourists affected by wind farms; and the economic impact of those reactions (a change in the number of tourists going to an area; a change in prices of tourism services).

Tourism by Region, 2009-2010

There has not been a comparable study since the Moffat Report on the effect of wind farms on tourism. To understand whether wind farms are currently having an effect on tourism in Scotland, we have analysed recent tourism statistics on visits, nights and spend, to look at trends in comparable case study regions to those used in the Moffat study.

The latest visitor research by region covers 2009-2010. Overall regional figures show a complicated picture regarding trends in visitor trips, nights and spend for each region. Table 1 shows figures for visitors by region. The four Moffat Report case study regions are underlined.

[9] Warren, C.R. & R.V.Birnie, 'Re-powering Scotland: Wind Farms and the 'Energy or Environment?' Debate, Scottish Geographical Journal, 125:2, 97-126.
[10] Ibid
[11] C.R.Warren, M.McFadyen (2010) 'Does community ownership affect public attitudes to wind energy? *Land Use Policy* 27, (2), 204-213 (http://www.sciencedirect.com/science/article/pii/S0264837709000039)
[12] For a synopsis of the Moffat Report, see Annex 3

Table 1. Tourism by Region, 2009-2010[13]

	2009-2010	Trips	Nights	Spend
Highlands & Islands	**% change**	**-26**	**-8**	**0**
Aberdeen & Grampian	% change	-7	-15	-14
Orkney & Shetland*	% change	0	-20	+7
Dumfries & Galloway	**% change**	**-6**	**+8**	**-8**
Scottish Borders	**% change**	**+17**	**+23**	**-22**
Edinburgh & Lothian	% change	-4	-6	+4
Angus & Dundee	% change	+16	+29	+18
Perthshire	**% change**	**3**	**-2**	**+9**
Fife	% change	+3	+20	-5
Glasgow & Clyde Valley	% change	+1	-5	+5
Ayrshire & Arran	% change	-26	+7	0
ALLFV**	% change	-3	-7	-4
Total	2009	16.78(m)	66.06(m)	4,054(£m)
	2010	16.45(m)	65.17(m)	4,106(£m)
	% change	-2	-1	+1

* Data available for UK visitors only ** Argyll, Loch Lomond and Forth Valley

The extent to which changes may or may not be due to wind farm developments in each region can be assessed by comparing the figures for each Moffat Report region with the map of developments given in Annex 2. It can be seen that the Moffat Report regions (Highlands & Islands, Dumfries & Galloway, Borders and Perthshire) continue to be significant areas of wind farm development. Data from 2010 on visitor numbers and spend for these regions give a mixed picture. Visitor numbers in the Highlands fell but overall spend by visitors remained the same. In Dumfries and Galloway the number of trips made by visitors fell, while the number of nights increased, and spending by visitors fell by 8% when compared with 2009. In the Borders visitor numbers increased but overall spend decreased by 22% and in Perthshire the number of trips was up slightly, the number of nights fell and visitor spend increased by 9%.

From these figures it is difficult to interpret what impact (if any) wind farms may have had on tourists' decision-making since there are many other factors that influence where people stay, how long they stay for and what they spend. Other factors, such as the recession of the last few years further complicate interpretation of trends in visitor numbers and spend for any particular region.

Regional Trends compared with National Trends, 2009-2010

How are the four Moffat Report regions faring relative to national trends? Table 2 presents data for the four Moffat Report regions compared to the national trend across trips, nights and spend for UK and overseas visitors to Scotland in 2009 and 2010[14].

[13] http://www.visitscotland.org/research_and_statistics/regions.aspx
[14] Note that these regions are not a direct comparison with the case study regions used by the Moffat report.

Table 2. Regional/National Trends, 2009-2010[15]

		UK Residents			Overseas visitors		
	2009-2010	Trips	Nights	Spend	Trips	Nights	Spend
Highlands & Islands	% change	-34	-11	-9	+12	+3	+24
Dumfries & Galloway	% change	-4	+13	+2	-32	-40	-58
Scottish Borders	% change	+14	+6	-14	+25	+90	-45
Perthshire	% change	+6	+3	+18	-15	-22	-31
National	% change	-0.8	-3.3	-3.9	-8.0	-2.8	+5.5

The data are inconclusive, with some regions faring worse than the national average and others faring better. The picture is further complicated by differences between UK residents and overseas visitors.

Although not strictly comparable, recent data indicates that on a number of measures tourism in the four Moffat Report regions is not being adversely affected. Again, it is difficult to determine the effect of wind farms on tourist decisions to visit from these data alone, since there are many other factors that influence tourist decisions.

Visitor Attractions: 2009

The annual Visitor Attraction Monitor (VAM) provides data on the number of visits to around 700 Scottish visitor attractions[16]. The last full year for which data are available is 2009 during which time the Scottish Visitor Attraction sector experienced an overall increase in visits of 3.5% compared with 2008.

Increases of between 11.9% and 0.1% were found across all 14 former VisitScotland areas, with the exception of Ayrshire & Arran (-1.0%) (see Table 1 in Annex 3).

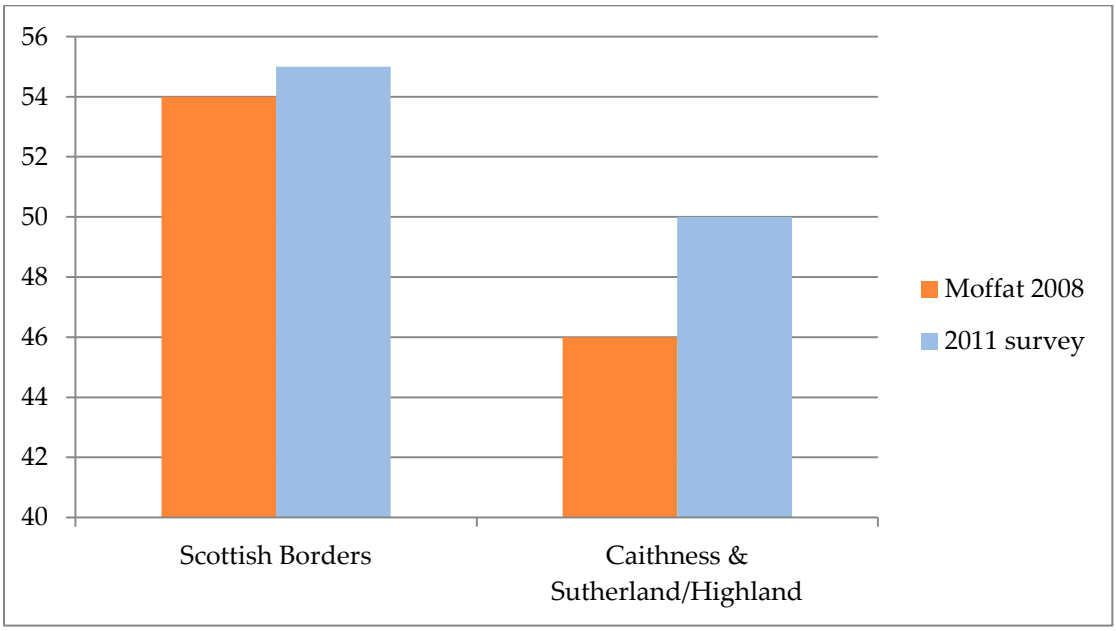
The four Moffat Report case study areas all had increased visitor attraction numbers from 2008 to 2009. We do not know the reasons for this, nor what, if any, relation this has to wind farm development. However we can say that the presence of wind farms in these areas had little or no impact on total visitor numbers attractions - it may even have contributed to an increase in visits.

Visitor Intentions to Return, 2011

One of the potential impacts of wind farms on tourism is that they might affect visitors' intentions to return. In other words, visitors might not be aware of wind turbines before they visit but the sight of them might affect their decision to return. Data on visitor intentions to return are available for two[17] of the Moffat Report regions. Both show an increase, as indicated in Figure 1 (figures are in percentages). It is not known if these visitors had seen a wind farm, and how this may or may not have affected their intention to return.

[15] http://www.visitscotland.org/pdf/Domestic_Tourism_2010_Full_Year%5B1%5D.pdf, http://www.visitscotland.org/PDF/International_Tourism_2010_Full_Year%5B1%5D.pdf
[16] http://www.moffatcentre.com/ourpublications/visitorattractionreports/
[17] Perth & Kinross, and Dumfries & Galloway were not reported in 2011.

Figure 1. Visitor Intentions to Return



The Moffat study tried to confirm whether the experience of seeing a wind farm altered visitors' intentions to return to the case study area or to Scotland as a whole. They reported that the vast majority (93-99%) of those who had seen a wind farm said that the experience would not have any effect, and there were some tourists for whom the experience increased the likelihood of return rather than decreasing it.

Annex 1: Renewables Policy

Since 2005 pro-renewables policy frameworks have been put in place at EU, UK and Scottish levels. In 2011 the Scottish Government revised targets for energy produced from renewable sources upwards[18]. The current targets are

- 100% electricity demand equivalent from renewables by 2020
- 11% heat demand from renewables by 2020
- At least 30% overall energy demand from renewables by 2020

These ambitious targets are endorsed by industry and business. While these targets are considered achievable, they also present challenges, most importantly the establishment of appropriate levels of support for deployment and adequate grid infrastructure. The government also recognises that Scotland's ambitions for renewable energy are not to be pursued at the expense of the wider environment.

Renewable energy is an important part of Scotland's economic development, as identified in the Low Carbon Economic Strategy published in 2011[19]. The large scale development of offshore wind represents the biggest opportunity for sustainable economic growth in Scotland for a generation, potentially supporting up to 28,000 directly related jobs and a further 20,000 indirect jobs and generating up to £7 billion for the Scottish economy by 2020. Onshore wind offers opportunities for local community ownership

Over the past four years much of the framework to achieve renewables targets has been put in place. This includes the Renewables Action Plan (2009-11), the Renewable Heat Action Plan (2009), and the National Renewable Infrastructure Plan (NRIP) (2010).

To meet the 2020 target for the equivalent of 100% of electricity consumption from renewables, a further increase in consenting and deployment rates will be required, especially for offshore wind. The challenge will be to ensure this is achieved in balance with environmental, land use and community issues.

To address the issues raised by future developments, including landscape issues and other considerations such as noise and archaeology, guidance in relation to wind farms has recently been reviewed and updated by SNH to reflect understandings of landscape and visual impacts related to wind farm development[20]. Scotland is also leading the international Good Practice Wind Project (GP WIND http://www.project-gpwind.eu/index.php?option=com_content&view=featured&Itemid=101) which aims to develop good practice in reconciling objectives on renewable energy with wider environmental objectives and actively involve communities in planning and implementation[21].Topics include reconciling environmental concerns with the benefits of wind farm development in terms of energy needs, CO_2 reduction and local social and economic benefits and impacts. Through the Land Use Strategy[22] the government promotes an integrated approach to land use and planning which means that any wind farm development should reflect the scale and character of the landscape as well as

[18] 2020 Routemap for Renewable Energy in Scotland (2011), Scottish Government, Edinburgh (http://www.scotland.gov.uk/Resource/Doc/917/0118802.pdf)
[19] 2020 Routemap
[20] Strategic Locational Guidance for Onshore Windfarms (2009), Siting and Designing windfarms in the landscape (2009), both SNH
[21] http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Action/leading/Good-Practice-Wind
[22] Getting the Best From Our Land: A Land-Use Strategy for Scotland (2011), The Scottish Government http://www.scotland.gov.uk/Resource/Doc/345946/0115155.pdf

any visual impact. Landscape Visual Impact Assessment (LVIA) typically includes assessment of impacts on key users of the landscape, including tourists[23]. Development plans must set out spatial frameworks for onshore wind farms generating over 20MW, identifying potential constraints such as the effects on landscapes, natural heritage and historic environments. Such factors are all important considerations when it comes to tourism.

Principal factors behind the drive towards renewables include tackling climate change by providing low-carbon alternatives to fossil fuels. Increased renewable energy production can also bring enhanced energy security, economic benefits and opportunities for community ownership[24]. However, Scotland's ability to supply sufficient renewable electricity and heat to meet its targets in a cost effective way depends critically on also reducing demand. Energy efficiency is at the top of the hierarchy of energy policies as the simplest and most cost-effective way to reduce emissions whilst at the same time maximising the productivity of renewable sources.

Challenges to meeting new renewables targets include planning and technical challenges. Scottish Planning Policy (SPP) requires planning authorities to support the development of wind farms in locations where the technology can operate efficiently and environmental and cumulative impacts can be satisfactorily addressed. Web-based renewables planning advice was launched in February 2011 (http://www.scotland.gov.uk/Topics/Built-Environment/planning/National-Planning-

Policy/themes/renewables.). Headline items in the Renewables Advice include greater emphasis on spatial planning for wind farms below 20 MW, as more development interest at this scale emerges. Ministers are also considering where there is a need for new planning advice, such as handling the relationship between offshore renewables and planning etc. It is likely that improving the 'front end' of planning will bring forward applications at the development management stage that are less contentious and have greater levels of support.

Two key issues affect how many renewable energy developments are deployed:

- onshore wind proposals on more contentious sites, for example closer to communities, or on or near landscape and environmentally sensitive areas, or Sites of Special Scientific Interest
- dealing with the cumulative impacts of renewables, especially onshore wind farms in certain locations

The way in which these issues are addressed is likely to affect any impact that wind farms have on tourism.

[23] Siting and Designing windfarms in the landscape (2009) Scottish Natural Heritage. http://www.snh.org.uk/pdfs/strategy/renewables/Guidance_Siting_Designing_windfarms.pdf
[24] 2020 Routemap for Renewable Energy in Scotland (2011), Scottish Government, Edinburgh (http://www.scotland.gov.uk/Resource/Doc/917/0118802.pdf)

Annex 2: Current and planned wind farm development

Offshore wind

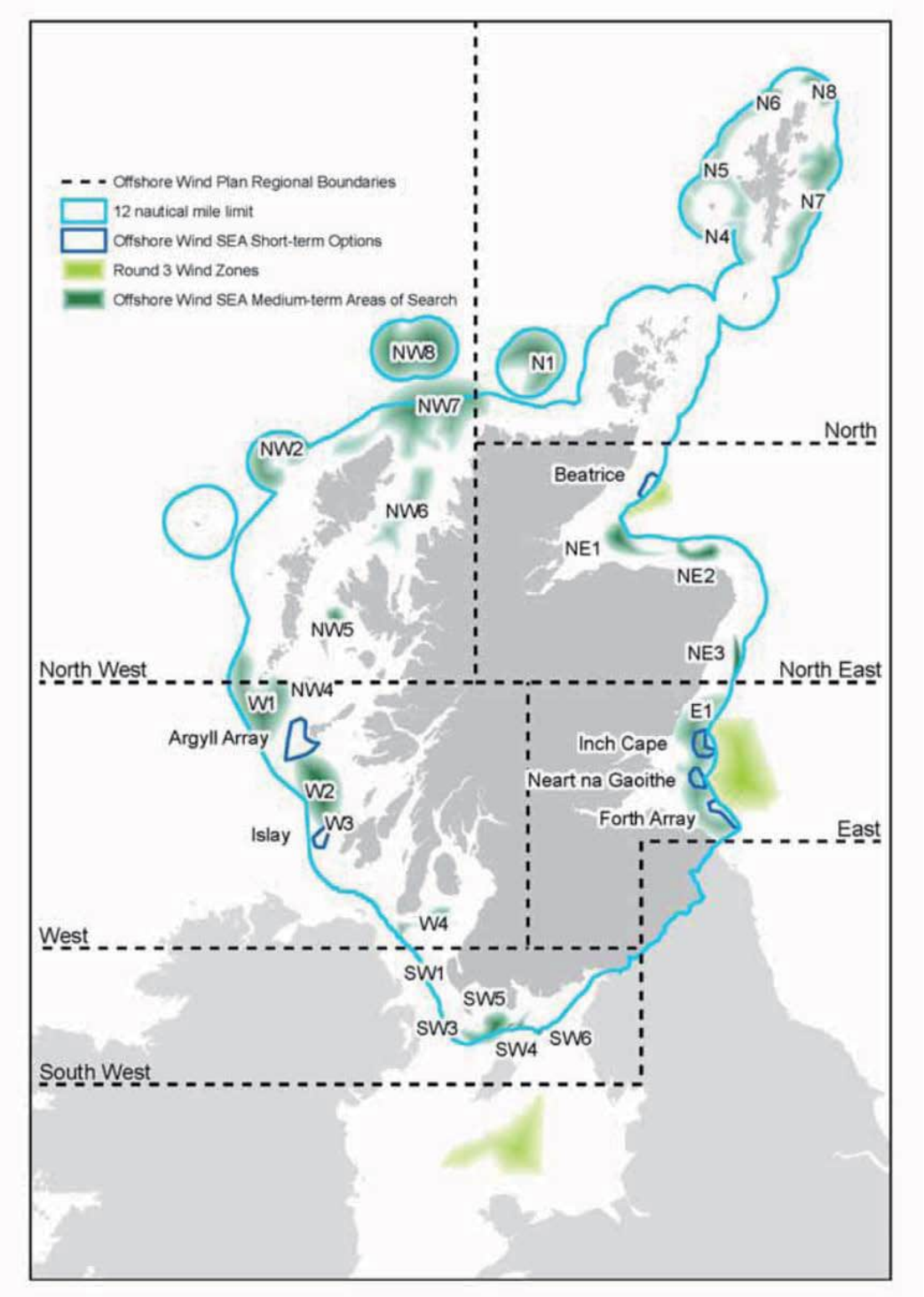
With 25% of Europe's offshore wind potential, the manufacturing, supply chain, job creation and training opportunities present Scotland with huge scope for sustainable economic growth in this area. There are currently two offshore wind sites within Scottish Territorial Waters: the Beatrice wind turbine demonstrator project in the Moray Firth, and; Robin Rigg in the Solway Firth.

The Sectoral Marine Plan[25] identifies 6 sites for short-term development, and a further 25 for medium term development. The short-term sites are: Islay; Argyll Array; Beatrice; Inch Cape; Neart na Gaoithe; and Forth Array

These are shown in Figure 1, along with the numbered medium term sites.

[25] Blue Seas – Green Energy, A Sectoral Marine Plan for Offshore Wind Energy in Scottish Territorial Waters (2011) The Scottish Government, Edinburgh.

Fig 1. Short term Sites and Medium Term Areas of Search (Final Plan)[26]

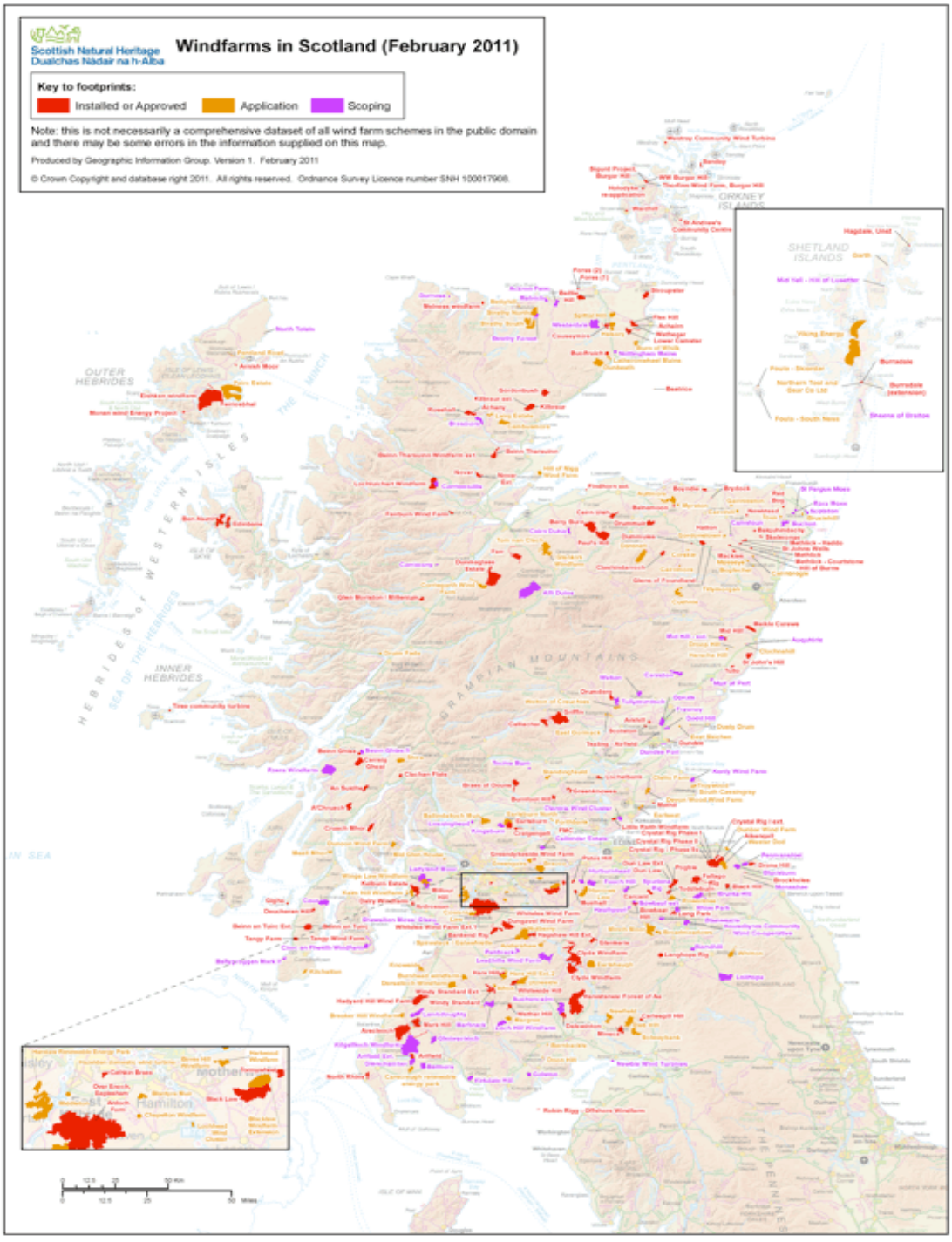


[26] Sectoral Marine Plan

Onshore wind

Current deployment includes 1,367 turbines at 117 sites already installed and operating, with a further 450 turbines at 20 sites under construction. Planned deployment includes 755 turbines at 76 sites consented and ready to be deployed if developer proceeds, a further 1,445 turbines at 100 sites awaiting planning and 1,628 turbines at 94 sites currently requesting pre-application scoping opinion[27] (see Fig. 2).

Fig 2. Development Sites for Onshore Wind, 2011[28]



[27] 2020 Routemap for Renewables

[28] http://www.snh.gov.uk/planning-and-development/renewable-energy/research-data-and-trends/trendsandstats/windfarm-footprint-maps/

Annex 3: Tourism

The Moffat Report found that:

- The maximum total reduction in employment and income for Scotland is 211 full time equivalent jobs (equivalent to 0.1% of tourism employment in Scotland) equivalent to £4.7m of gross value added at 2007 prices[1]. It therefore concluded that the negative impact of wind farms on tourism at national level is small and any reduction in employment in tourism will be less than the numbers currently directly employed in the wind power industry.
- Impacts in some local areas are important enough to warrant specific planning consideration, including a Tourist Impact Statement as part of the Environmental Impact Analysis.
- Large single developments are preferable to a number of smaller developments as it is the basic intrusion into the landscape that generates the initial loss, rather than subsequent developments on the same site.
- The public did not recognise that some areas had been protected from development and hence the wilderness nature of such areas needs to be publicised in order to provide substitution opportunities for tourists who find wind turbines an objectionable presence.
- Some tourists were positively attracted to wind turbines which suggest there may be an opportunity to market areas of high development as 'green'.

People visit Scotland for many reasons. According to VisitScotland, Scotland's national tourism organisation, a tourist is a non-resident who spends one or more nights in Scotland for the purposes of a holiday; on business; to visit friends or relatives; or for some other purpose[29].

In 2011 almost 16 million overnight tourism trips were taken in Scotland, for which visitor expenditure amounted to over £4.5 billion[30]. This figure does not include day visitors who also form an important market for visitor attractions. The majority of the volume and value of Scotland's tourism is accounted for by the domestic markets – Scotland, England, Wales and Northern Ireland. In 2011 their total share was 85% of trips and 67% of visitor spend[31]. The majority of visitors are visiting a number of regions during their trip[32].

Tourism is one of Scotland's key economic contributors, providing direct employment for 200,000 people, many in rural areas, and visitor spending in excess of £4 billion per annum in 2011[33]. It is an important part of the social,

[29] VisitScotland (2011) Key Facts on Tourism http://www.visitscotland.org/pdf/VS%20Insights%20Key%20Facts%202012_FINAL.pdf (14/08/2012)
[30] Ibid.
[31] Ibid.
[32] Scotland Visitor Survey 2011 & 2012 Summary of 2011 Results (2012) Visit Scotland http://www.visitscotland.org/pdf/External%20Visitor%20Survey.pdf
[33] Tourism Scotland 2020: A National Strategy (2012) The Scottish Tourism Alliance

economic and cultural well-being of Scotland, from major cities to rural areas. The quality of both the culture and the environment is a key part of building a sustainable tourism sector. Scotland is renowned, at home and abroad, for its diversity and quality of landscape and scenery, particularly its distinctive mountains, coasts and lochs. Such landscapes are valued for their remoteness and their wilderness qualities, which enhance the tourism experience. Tourism surveys of national and international visitors consistently cite the importance of natural landscape and scenery as main attractions[34]. Scotland's appeal can be attributed to four groups of assets[35]:

- nature, heritage and activities
- destination towns and cities
- events and festivals
- business tourism

However, the tourism sector also faces a number of challenges and opportunities due to the changing global economic situation, climate change, rising fuel prices and security concerns.

Tourism offers an important, sometimes vital, source of income for remote and rural communities. These same areas are often the most sought after for placement of wind farms because they have the best wind resource. They are also promoted for their landscape and wilderness qualities, which the presence of wind farms might disrupt by 'industrialising' the scenery. Land use and landscapes play an integral part in Scotland's tourism industry, providing a range of opportunities for outdoor pursuits, visiting historic sites and enjoying the natural heritage.

Many people find that structures such as wind turbines, pylons and mobile phone masts reduce the attractiveness of a landscape. This may lead to a reduced demand which can result in either reduced prices for tourism services or reduced numbers of tourists, or both. At the same time, the tourism industry itself requires a reliable supply of electricity. Renewable energy can bring social and economic benefits to communities and businesses.

Recent and Current Tourism Statistics for Scotland

Since 2008 a number of reports have been published which give information on the state of Scotland's tourist sector. Table 1 shows the percentage change in the number of visitors to attractions from 2008-09. The only area to show a decline was Ayrshire and Arran.

Table 1. Visitor Attraction Monitor, 2009

Former VisitScotland Area	*Sample*	Visits 2009	Visits 2008	% 09/08
Aberdeen & Grampian	84	2,172,845	2,059,392	5.5
ALLFV*	82	4,145,871	4,139,865	0.1
Angus and City of Dundee	31	1,515,360	1,468,806	3.2
Ayrshire & Arran	27	1,321,332	1,334,498	-1.0
Dumfries & Galloway	50	1,787,858	1,692,827	5.6
Edinburgh & Lothians	84	9,878,362	9,695,224	1.9
Greater Glasgow & Clyde Valley	73	15,801,552	15,205,397	3.9
Highlands	88	3,849,114	3,583,171	7.4
Fife	34	852,531	779,712	5.9
Orkney	22	517,757	510,233	1.5

[34] VisitScotland (2012) Wind Farm Consumer Research
[35] Tourism Scotland 2020

Outer Hebrides	12	326,339	291,756	11.9
Perthshire	37	1,386,752	1,350,727	2.7
Borders	40	1,025,624	942,858	8.8
Shetland	18	195,054	187,236	4.2
Total	682	44,749,351	43,241,702	3.5

Scotland as a whole: 2006-2010

Figures 1 and 2 present visitor numbers and spend over the 5 years between 2006 and 2010 (rounded for ease of reading)[36].

Fig 1. Total trips in Scotland 2006-2010

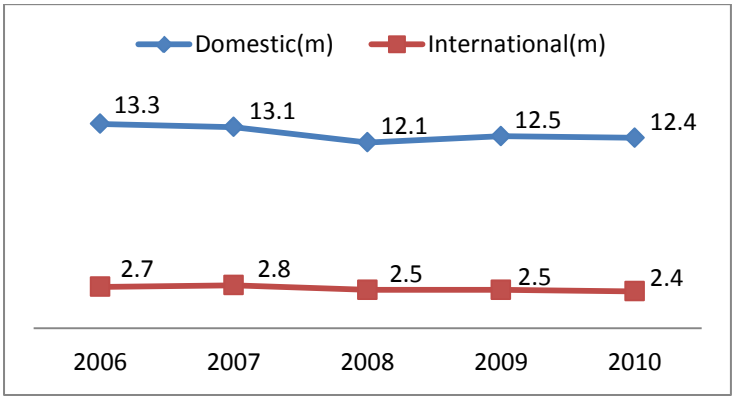
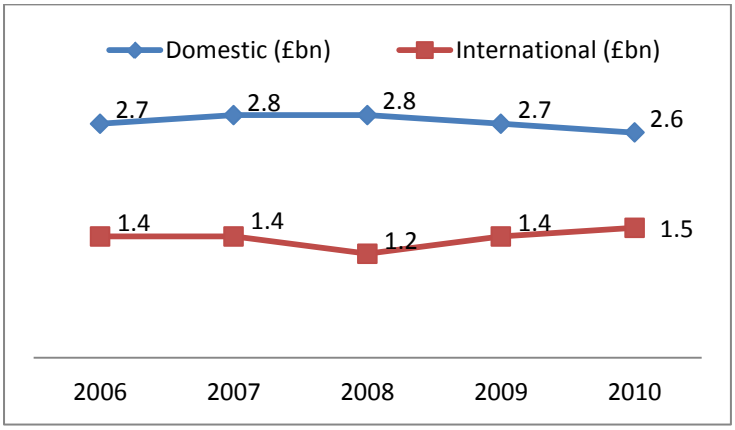


Figure 1 shows that both domestic and international trips to Scotland have fallen since 2006. Domestic trips were lowest in 2008 but have not yet returned to 2006 levels, and international trips have fallen to 2.4m in 2010 from a high of 2.8m in 2007.

Fig 2. Total visitor spend in Scotland 2006-2010



[36] Trends and Markets Research Report (2012) Susan Dickie, VisitScotland. http://www.visitscotland.org/pdf/Trends%20and%20markets%20report%20for%20Scottish%20tourism%20strategy.pdf

Figure 2 shows that domestic spend grew until 2008 but has dropped since, and remains below 2006 levels of spend. International spend is the only figure to increase since 2009 and since 2006 despite fewer trips by international visitors in 2010.

These figures clearly show a dip in tourist numbers and spend as a result of the international economic climate. Thus the tourism industry is already being negatively affected by the economic situation, although it may now be showing signs of recovery. The question is what additional effects (if any) is the expansion of wind farms having?

Domestic Tourism 2010

VisitScotland reported that overnight visitors to Scotland from the rest of the UK recorded 12.4 million trips in 2010 and spent over £2.6 billion[37]. This represents a small decline over 2009 in trips (1%) and a drop in spending (4%). This compares to domestic tourism within the UK which was down 5% in trips while the number of nights fell 6% and expenditure fell by 5%. These figures suggest that the Scottish tourism market is continuing to perform well despite the UK recession.

New data relating to visitor numbers and spend for the four case study areas identified in the 2008 Moffat report present a mixed picture (see table 2). Visitor numbers and spend in Highlands and Islands fell for UK visitors and rose for visitors from overseas, whereas in Perthshire the opposite was the case; overseas visitor spend and numbers fell while domestic spend and numbers rose. In the Scottish Borders numbers were up for both UK and overseas tourists, but spend for both was down on 2009. In Dumfries and Galloway numbers and spend by overseas visitors were down, while trips by UK visitors were down but nights and spend increased[38].

Table 2 Tourism by Region, 2009-2010[39]

		UK Residents			Overseas visitors		
	2009-2010	Trips	Nights	Spend	Trips	Nights	Spend
Highlands & Islands	**% change**	**-34**	**-11**	**-9**	**+12**	**+3**	**+24**
Aberdeen & Grampian	% change	-12	-20	-22	+8	-8	-4
Orkney & Shetland	% change	0	-20	+7			
Dumfries & Galloway	**% change**	**-4**	**+13**	**+2**	**-32**	**-40**	**-58**
Scottish Borders	**% change**	**+14**	**+6**	**-14**	**+25**	**+90**	**-45**
Edinburgh & Lothian	% change	-6	-8	-7	+1	-5	+17
Angus & Dundee	% change	+16	+30	+15	0	+3	+18
Perthshire	**% change**	**+6**	**+3**	**+18**	**-15**	**-22**	**-31**
Fife	% change	+5	+6	-33	-8	+51	+21
Glasgow & Clyde Valley	% change	+7	0	-4	-18	-11	+24
Ayrshire & Arran	% change	-35	+9	-13	-31	-4	+37

[37] VisitScotland Review of Domestic Overnight Tourism to Scotland in 2010 http://www.visitscotland.org/pdf/Domestic_Tourism_2010_Full_Year%5B1%5D.pdf

[38] Note that these regions are not a direct comparison with the case study regions used by Moffat.

[39] http://www.visitscotland.org/research_and_statistics/regions.aspx

ALLFV*	% change	-4	-11	-7	0	+6	+6
Total	2009	13.01(m)	44.27(m)	2736(£m)	3.77(m)	21.79(m)	1318(£m)
	2010	12.8(m)	43.92(m)	2612(£m)	3.65(m)	21.25(m)	1494(£m)
	% change	-2	-1	-5	-3	-2	+13

- Argyll, Loch Lomond and Forth Valley

Thus it is difficult to see an overall picture emerging. This is partly because many factors affect tourists' decisions on where to travel, including weather, affordability and what is on offer. These statistics tell us where people visited, for how long and what they spent but they do not tell us WHY. Further research is needed to unpack visitors' motivations and decision-making regarding which areas they visit and which areas they avoid.

These figures give a general indication of how tourism in Scotland is faring by region. They are a useful way of comparing tourist activity across three measures with previous years however they do not tell us what might prompt a change in behaviour. However the extent to which this might be due to the presence of wind farms in a particular area or what other factors (festivals, city promotions, competitions) might be involved in decisions to travel and stay in a particular region.

Accommodation Occupancy 2011

The Scottish Accommodation Occupancy Survey (SAOS) monitors the performance of the tourist industry in Scotland through occupancy figures for the five main accommodation sectors: hotels, guest houses and bed and breakfasts, self-catering, camping and caravan parks and hostels. Comparative figures from previous years are also available. The Annual Report 2011[40] shows that the number of overnight tourism trips in Scotland increased by 7% for serviced rented accommodation (such as hotels/motels, guest houses and B & Bs). The number of overnight tourism trips to self-catering rented accommodation (including caravan/campsites) increased by 12% in 2011.

Domestic and Overseas Tourism, April 2011 - March 2012

VisitScotland publishes the latest available statistics from the year to date from the main tourism monitor surveys. These statistics show how the Scottish tourism industry is faring as a result of changes in consumer and trading conditions.

The latest figures on domestic and international tourism from April 2011 - March 2012 show increases in the number of trips, days and spend for domestic tourists (Table 2), and increases in trips and spend for international tourists[41] (Table 3)

Table 3 Latest figures: Domestic tourism (GB markets) – 2012

12 month rolling total	Trips (m)	Nights (m)	Spend (£m)
April 2011-March 2012	12.9	44.8	3,015
% change on April 2010-March 2011	+5.5%	+4.9%	+2.1%

Table 4 Latest figures: International Tourism – 2012

12 month rolling total	Trips (m)	Nights (m)	Spend (£m)

[40] VisitScotland Accommodation Occupancy Surveys Annual Report 2011 http://www.visitscotland.org/pdf/218761%20SAOS%20annual%20report%20V3.pdf

[41] http://www.visitscotland.org/research_and_statistics/tourismstatistics/latest_statistics.aspx 20/07/2012

April 2011 - March 2012	2.4	N/A	1,499
% change of April 2010- March 2011	+1.3%	N/A	+3.6%

The figures show that trips and nights from domestic tourism increased by about 5%, with spend increasing more slowly, by about 2%. International tourists have also made slightly more trips so far in 2012 than in 2011 (1%) and have increased their spend even more (nearly 4%). This indicates that domestic visitors are coming more frequently but spending less, while international visitors are coming slightly more and spending more.

Tourism opportunities from wind farms

Wind farms can themselves be tourism destinations, with the wind turbines at the Ecotech Centre (http://www.ecotech.org.uk/oldhomepage.html) proving to be popular visitor attractions[42]. Public access to wind farms, coupled with tourist guides and information boards, encourages activities such as walking, rambling and even dog sled racing which in turn have knock-on effects for other local food and tourism businesses. Whitelee wind farm (http://whiteleewindfarm.co.uk/home?nav) near Glasgow has a range of activities, including outdoor pursuits and talks from conservation groups, as well as encouraging the public to get close to the turbines and learn more about renewable energy.

Eco-tourism, which maximises environmental performance and minimises impact on the local environment, is identified as an area for growth[43]. Wind farms and renewables could play and important role in this area.

[42] The Impact of Wind Farms on the Tourist Industry in the UK (2006) British Wind Energy Association http://www.bwea.com/pdf/tourism.pdf
[43] National Strategy 2020

Annex 4: Public Attitudes to Wind Power

Public attitudes to wind power are fundamentally different to attitudes to wind farms[44], a difference that has created what is sometimes referred to as the 'social gap'[45]. Although there is broad public support for renewables, wind power included, there is often resistance at a local level to particular developments. Some opposition is based on misconceptions (for example noise, environmental impact, efficiency) but local objections also seem to include aesthetic and emotional feelings around what amounts to a visual intrusion on a landscape to which residents (and visitors) may have a strong attachment. Tourists, and those taking part in recreation, might not be present in the area for a long time, but their sensitivity to landscape change is regarded as high because their purpose is specifically to enjoy their surroundings and 'take in the view'.

While residents of the local community may be able to receive some of the benefits of the profits generated by community-owned schemes, visitors are less likely to be involved in such schemes. Evidence suggests that potential opposition to new developments can be avoided by giving local people a greater say in the planning and development stages, and through creating community ownership schemes[46], but it is difficlut to include visitors in such schemes.

Potential opposition to wind turbines may not be the result of 'NIMBYism' but a more complex reaction involving nature/industry symbolic contradictions between a place represented in terms of scenic beauty and which provides a restorative environment for visitors and residents, and a wind farm that will 'industrialise' the area[47]. The inclusion of subjective views and preferences of different groups in the decision-making process regarding wind farm projects means that the landscape has become a point of contestation and negotiation between different ways of seeing, various interests, value judgements, ideologies, myths and representations.

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www.climatexchange.org.uk

[44] Common Concerns about wind Power (2011) Centre for Sustainable Energy. http://www.cse.org.uk/downloads/file/common_concerns_about_wind_power.pdf
[45] P. Devine-Wright, Y. Howes (2010) 'Disruption to place attachment and the protection of restorative environments: A wind energy case study', *Journal of Environmental Psychology*, 30, 3, 271-280.
[46] Living With Environmental Change http://www.lwec.org.uk/stories/changing-behaviour-learning-lessons
[47] Devine-Wright & Howes (2010)

Offshore Energy Strategic Environmental Assessment

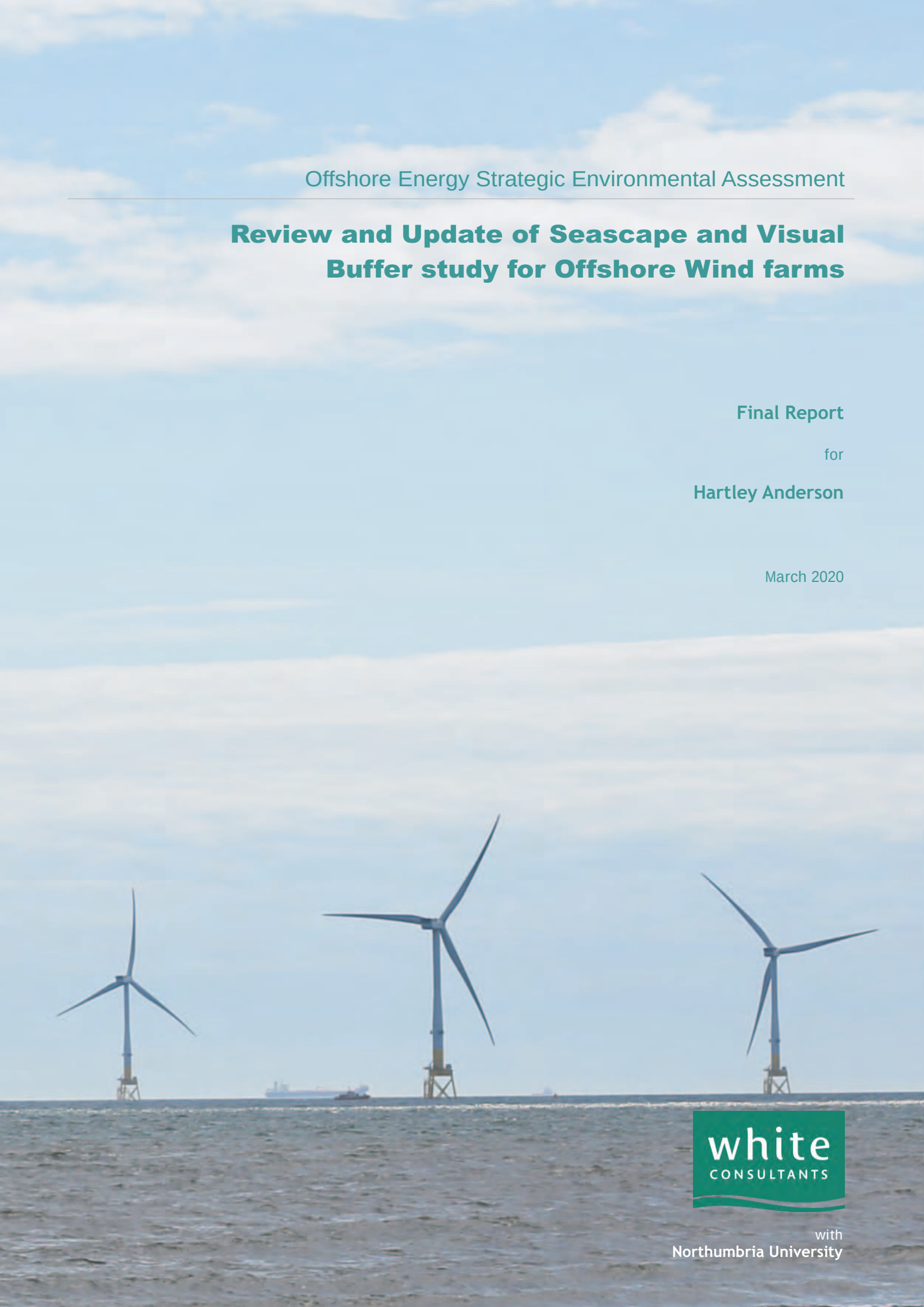
Review and Update of Seascape and Visual Buffer study for Offshore Wind farms

Final Report

for

Hartley Anderson

March 2020



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Appendix 2
White Consultants (2020)

Offshore Energy Strategic Environmental Assessment

Review and update of Seascape and Visual Buffer study for Offshore Wind farms

Final Report

for

Hartley Anderson

March 2020

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with

Northumbria University

Offshore Energy Strategic Environmental Assessment

Review and update of Seascape and Visual Buffer study for offshore wind farms

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1. Introduction

1.1. White Consultants was commissioned in July 2019 by Hartley Anderson to undertake an updated seascape and visual buffers study to inform future offshore wind farm leasing, for which the Department for Business, Energy and Industrial Strategy (BEIS) is undertaking a Strategic Environmental Assessment (SEA) programme. Two previous studies have been undertaken- one completed in January 2009 and informing the OESEA2 (Offshore Energy SEA) and one in February 2016 informing OESEA3.

1.2. The published OESEA3 Environmental Report (March 2016) stated as part of Recommendation 1 that developments (individually or cumulatively) should aim to avoid causing significant detriment to amenity and well-being as a consequence of deterioration in valued attributes such as landscape, tranquillity and other factors. In the discussion on visual buffers (derived from White Consultants (2016)) the report states:

'Further conclusions of the work were that for high value and high sensitivity coastlines, a distance of 30km from the coast (the limit of visual acuity) could be attributable to developments for a range of sizes (e.g. 3.6MW to 15MW), whereas distances for areas of medium value and sensitivity may be in the order of 13km (3.6MW turbines), 20km (4-8MW turbines) or 20+km (10-15MW turbines).' (p291).

1.3. This report seeks to update consideration of these distances.

The Brief

1.4. The brief states that the project will update the previous seascape assessments informing OESEA and OESEA3 in relation to offshore wind development. This includes an update on:

Stage 1

- Planning policy context and seascape assessment guidance (including an international perspective).
- Analysis of wind farms coming forward in respect of their seascape and visual impact assessments (SVIAs), focussing on visual impact of a proposed development alone and cumulatively with other wind farms.

Stage 2

- Additional analysis using wirelines to consider larger scales of turbines up to 400m high to blade tip (20MW + capacity).

Stage 3

- The effect of visibility modifiers (e.g. haze) on limiting the effects of wind farms at various distances referring to research and UK weather data.
- A review on how other nations implement seascape buffers.
- The effect of lighting (navigational and aviation lighting) in contributing to development effects.
- Cumulative effects of existing and proposed wind farms.
- A site review of constructed wind farms against their SVIAs.

1.5. The above evidence will be brought together to inform a revised set of seascape buffers to national scale. It is important to note that buffers are a strategic level tool to identify where effects are likely and do not necessarily suggest no-go areas for development. These areas would need to be subject to careful further assessment and consideration should development be proposed within them.

1.6. The research undertaken for the study was carried out primarily in July to early September 2019 to inform the draft Stage 1 and 2 baseline report in early October and draft Stage 3 in early November 2019. In finalising the report some other relevant documents have come to light which have been commented on.

1.7. The report considers the updated context (Chapter 2), policy (Chapter 3), guidance (Chapter 4), SVIA analysis (Chapter 5), wireline analysis (Chapter 6), visibility modifiers (Chapter 7), international offshore wind farm development patterns (Chapter 8), the effect of lighting (Chapter 9), cumulative effects (Chapter 10), site review (Chapter 11), and findings and discussion (Chapter 12).

2. OESEA context and previous study findings

Context

2.1. Strategic Environmental Assessment (SEA) is the process of appraisal through which environmental protection and sustainable development may be considered, and factored into national and local decisions regarding Government (and other) plans and programmes – such as oil and gas licensing rounds and other offshore energy developments, including renewables and gas and carbon dioxide storage.

2.2. The SEA process aims to help inform Ministerial decisions through consideration of the environmental implications of the adoption of a proposed plan/programme. The Department for Business, Energy and Industrial Strategy (BEIS) as the principal regulator of the offshore wind industry, has taken a proactive stance on the use of SEA as a means of striking a balance between promoting economic development of the UK's offshore energy resources and effective environmental protection.

2.3. The SEA Directive sets out the information to be included in the environmental report of the Strategic Environmental Assessment, including the likely significant effects on the environment, including issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the inter-relationship between the factors.

2.4. BEIS's predecessors, the Department of Trade and Industry (DTI) and Department for Energy and Climate Change (DECC) undertook the offshore energy SEA (OESEA), OESEA2 (DECC, 2009) and OESEA3 (DECC, 2016). The OESEA4 area for offshore wind applies to the territorial and offshore waters of England (all schemes) and Wales (for schemes with installed capacity over 350MW).

2.5. The report is being undertaken in advance of the OESEA4 scoping exercise. The OESEA3 scoping report stated that the SEA objectives for landscape/seascape were:

> *'To accord with, and contribute to the delivery of the aims and articles of the European Landscape Convention and minimise significant adverse impact on seascape/landscape including designated and non-designated areas.'* (DECC, 2015, p108)

2.6. The SEA indicators were stated as:

- *'No significant impact on nationally designated areas.*
- *Extent of the visual resource potentially affected by the particular developments.*
- *Number of areas of landscape sensitivity affected by proposed developments.*
- *Trajectory of change in coastal National Character Areas shows no adverse effects arising from plan activities.*
- *Change in tranquillity based on national mapping projects.'* (DECC, 2015, p108)

2.7. Although the objectives and indicators for OESEA4 are not yet available, the relevant national policy has not changed.

OESEA visual buffers findings

2.8. The OESEA3 report (DECC, 2016) addressed the visual impacts of turbines from 3.6MW to 15MW turbines based on the conclusions of White Consultants, February 2016.

2.9. The interpretation of the threshold of significance was derived from a 'worst case' scenario in the DTI (2005) seascape and visual impact assessment guidance which states that moderate adverse effects could be judged as significant (although it is most likely they are not). OESEA stated this was '*highly precautionary*' (Page 291, Paragraph 2).

2.10. The results from the SVIA analysis stated in the report were as follows (page 291, second paragraph):

'In most cases the threshold of no significance for medium sensitivity receptors was ~24km, and beyond 24km for high sensitivity receptors or 15MW turbines in all cases. Further conclusions of the work were that for high value and high sensitivity coastlines, a distance of 30km from the coast (the limit of visual acuity) could be attributable to developments for a range of sizes (e.g. 3.6MW to 15MW), whereas distances for areas of medium value and sensitivity may be in the order of 13km (3.6MW turbines), 20km (4-8MW turbines) or 20+km (10-15MW turbines).'

Further, the document stated (page 291, paragraph 3):

'….any consideration of coastal "buffers" is too generalised an approach to take into consideration the many anthropogenic and natural variations along the coast and the variety of development scenarios which might take place (e.g. device type and design, array orientation).'

2.11. The results of the wireline assessment of representative wind farm scenarios were noted (page 291, Table 5.26):

Table 2.1 Threshold for 'significance' for representative 500 MW wind farm scenarios viewed at 22 m ASL

Turbine size(MW)	Distance from shore			
	13km	18km	24km	35km
3.6	Moderate and moderate/large	Small and small/moderate	Small	n/a
5	Moderate and large	Moderate and moderate/large	Small and small/moderate	n/a
7/8	Moderate and large	Moderate and large	Small	Very small
10	Large	Moderate and large	Small and small/moderate	Very small
15	Large	Moderate and large	Moderate	Very small

2.12. These conclusions will be clarified and updated in this report.

3. Current and planned offshore wind farm developments

Overview

3.1. Existing offshore wind farms from previous rounds of development are shown on **Figure 3.1.** This indicates the status of wind farms including those in operation, under construction, consented and in planning. Overall there is currently 9.3GW of offshore wind energy operational and a further 4.4GW under construction (Crown Estate, September 2019).The current Round 4 bidding areas are shown on **Figure 3.2.**

3.2. Each round is discussed in turn to provide a background to the development of offshore wind energy. It should be noted that, in the tables below, the turbine capacity and number of wind turbines are the maximum assessed in SVIAs, not necessarily those installed.

Round 1

3.3. The Crown Estate launched the first round of site awards in December 2000. Developments had to comply with a number of conditions:

- Sites had to be within the 12 nautical mile territorial limit
- Sites had to be at least 10km apart (unless agreement made between developers to develop adjacent or in close proximity)
- Site areas were limited to 10km^2
- Site had to be a minimum generating capacity of 20MW
- Sites were restricted to a maximum of 30 turbines

3.4. A summary of Round 1 wind farms is shown in **Table 3.1.**

Table 3.1 Round 1 offshore wind farms

Site Name	Capacity (MW)	Turbine Capacity (MW)	No. of Turbines	Development Status
Burbo Bank	90	3.60	25	Operational
Gunfleet Sands	108	3.60	30	Operational
Inner Dowsing	108	3.60	30	Operational
Kentish Flats	90	3.00	30	Operational
Lynn	86.4	3.60	24	Operational
North Hoyle	60	2.00	30	Operational
Rhyl Flats	90	3.60	25	Operational
Robin Rigg East	90	3.00	30	Operational
Robin Rigg West	84	3.00	28	Operational
Scroby Sands	60	2.00	30	Operational
Ormonde Offshore	150	5.00	30	Operational
Teesside	62.1	2.30	27	Operational
Barrow	90	3.00	30	Operational
Cirrus Shell Flat Array	284	3.15	90	Application Withdrawn
Scarweather Sands	108	3.00	30	Application Withdrawn
Cromer	108	4.00	30	Abandoned

3.5. The implemented turbines capacities ranged from 2MW at North Hoyle through to 5MW at Ormonde Offshore. Most are 3MW or 3.6MW. Typical heights of turbines are 154m to blade tip. The number of turbines range from 24 to 30.

Round 2

3.6. The DTI's consultation paper 'Future Offshore' (2002), set out the Government's policy direction and commitment to take a more strategic approach to offshore wind farm development. The paper set out the Government's intention to restrict development to strategic areas and undertake a Strategic Environmental Assessment (SEA) prior to the implementation of the SEA Directive. Three strategic areas were proposed:

- The Greater Wash
- The Thames Estuary
- The North West (Liverpool Bay).

3.7. Completed in 2003, the DTI requested that the Crown Estate make available seabed areas in these strategic regions for the purpose of further wind farm development. The DTI issued guidance including a precautionary coastal exclusion zone of 8-13km from the coast to reduce the visual impact of development. The SEA set out development scenarios limiting the total development possible within these three areas to 4-7.5GW (including the contribution from Round 1).

3.8. A summary of Round 2 wind farms is shown in **Table 3.2**.

Table 3.2 Round 2 offshore wind farms

Site Name	Installed Capacity (MW)	Turbine Capacity (MW)	No. of Turbines	Development Status
Lincs	270	3.60	75	Operational
Dudgeon East	402	6.00	67	Operational
Greater Gabbard	504	3.60	140	Operational
Gunfleet Sands II	64.8	3.60	18	Operational
Gwynt y Môr	576	3.60	160	Operational
Humber Gateway A	219	3.00	73	Operational
London Array Phase 1	630	3.60	175	Operational
Race Bank A	580	6.00	91	Operational
Sheringham Shoal	317	3.60	88	Operational
Thanet	300	3.00	100	Operational
Walney 1	183	3.60	51	Operational
Walney 2	183	3.60	51	Operational
West of Duddon Sands	389	3.60	108	Operational
Westermost Rough A	210	6.00	35	Operational
Triton Knoll	900	6.00	150	Consent Granted
London Array Phase 2	240	2.93	341	Abandoned
Docking Shoal A	540	5.00	108	Consent Refused

3.9. The installed turbine capacities range from 3MW at Humber Gateway through to 6MW at Dudgeon East, Race Bank and Westermost Rough. Most are 3.6 MW. Typical heights of turbines are at 154m to blade tip. The number of turbines in each array generally significantly exceeds the Round 1 wind farms, ranging from 18 to 175.

Round 2.5

3.10. Extensions to existing wind farms outside the Rounds 2 and 3 zones are put into the Round 2.5 category. These are set out in **Table 3.3**.

Table 3.3 Round 2.5 offshore wind farms

Site Name	Installed Capacity (MW)	Turbine Capacity (MW)	No. of Turbines	Development Status
Burbo Bank extension	258	8.00	32	Operational
Galloper Wind Farm	336	6.00	56	Operational
Kentish Flats 2	49.5	3.30	15	Operational
Walney 3	649	6.00	110	Operational
Thanet extension	340	10-12	34	Awaiting decision

3.11. The turbines used range from 3.3MW at Kentish Flats 2 through to 8MW at Burbo Bank Extension. Typical heights of the 8MW turbines are 190m to blade tip. The Burbo Bank Extension is, at its closest, the same distance offshore as the existing wind farm but with significantly larger turbines at wider spacing.

Round 3

3.12. In December 2007, the UK Secretary of State for BERR, John Hutton, announced an SEA for a draft plan for further development of UK offshore energy resources, including some 25GW of additional offshore wind power generation capacity. In June 2008, the Crown Estate announced a 'Round 3' leasing process to provide the additional 25GW.

3.13. The potential development zones for Round 3 leasing were typically well offshore but limited to a water depth of 60m for technical reasons. Much of this available sea floor is in the area south of the Dogger Bank, more than 111km offshore, and nearly four fifths is at depth of 40-60m.

3.14. The zones for consideration were nominally revised down from 11 to 9 zones around the UK coast in September 2008.These were:

- Moray Firth
- Firth of Forth
- Dogger Bank
- Holderness
- Norfolk
- Hastings
- West Isle of Wight
- Bristol Channel
- Irish Sea

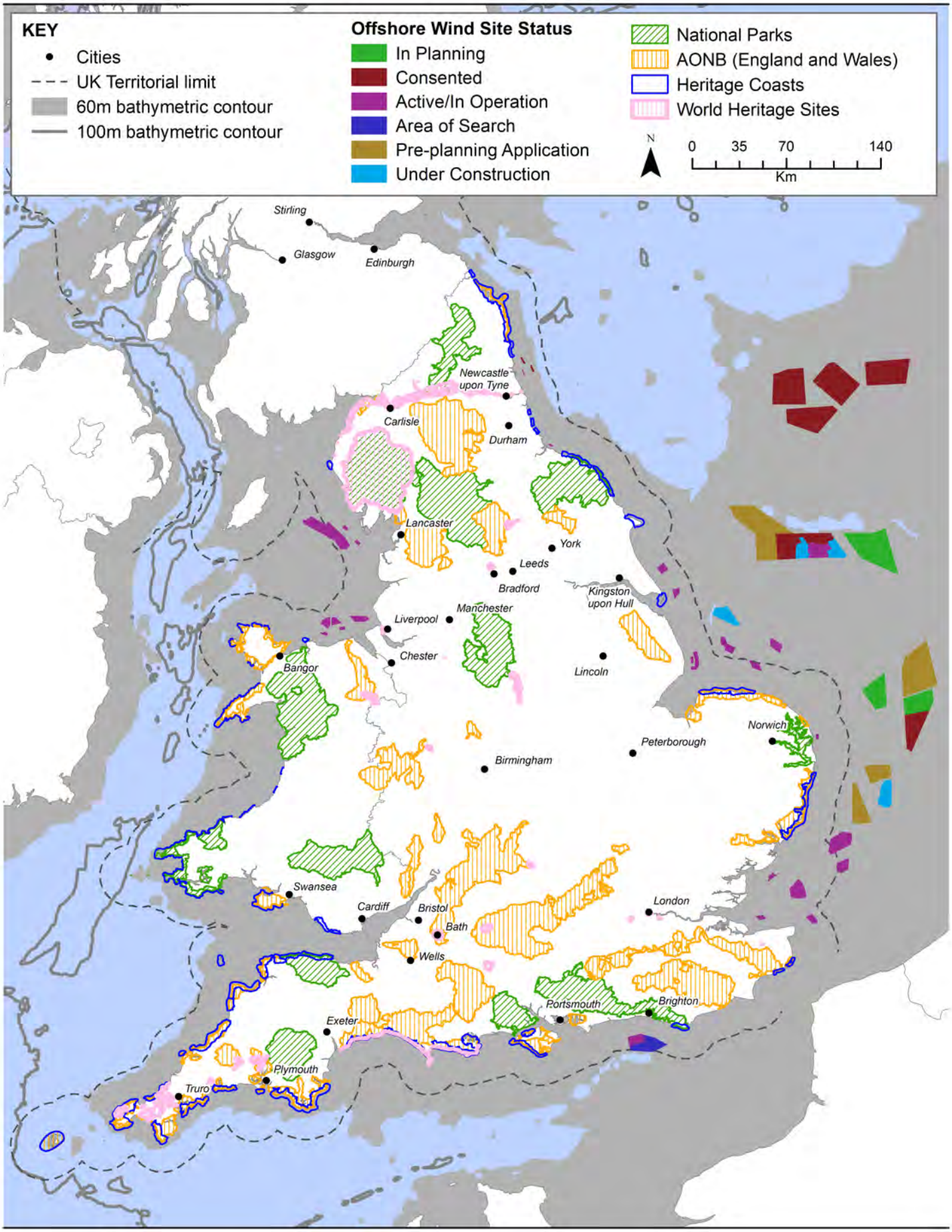
3.15. Subsequently, due to technical problems encountered by developers two zones were withdrawn- Bristol Channel and the Irish Sea.

3.16. A summary of Round 3 wind farms is shown in **Table 3.4**.

Table 3.4 Round 3 offshore wind farms

Site Name	Installed Capacity (MW)	Turbine Capacity (MW)	No. of Turbines	Development Status
Hornsea Project One (centre)	1,200	7.00	171	Operational
Rampion Offshore Wind Farm (Hastings Zone)	400	3.6/5.00	116	Operational
East Anglia ONE (EA 1)	700	7.00	102	Construction
Hornsea Project One (east and west)	1,200 (with centre above)	7.00	171 (with centre above)	Construction
Hornsea Project Two - Optimus and Breesea	1,800	5.00	360	Construction
Moray East (was Telford, Stevenson and MacColl)	950	9.5	100	Construction
Dogger Bank Creyke Beck A & B	2,400	5.00	360	Consent Granted
Dogger Bank Teesside A & B	2,400	5.00	480	Consent Granted
East Anglia THREE	1,200	10.00	120	Consent Granted
Moray West	850	10-11.8	72-85	Consent Granted
Seagreen Alpha	525	7.00	75	Consent Granted
Seagreen Bravo	525	7.00	75	Consent Granted
Hornsea Project Three	2,400	Unspecified	Up to 300	Application Submitted
Norfolk Vanguard	1850	9-20	90-200	Application Submitted
Norfolk Boreas *	1800	9-20	90-200	Application Submitted
Seagreen Alpha & Bravo (Optimised)	1500	Unspecif-ied	Up to 120	Application Submitted
East Anglia ONE North	Up to 800	12 to 19	Up to 67	Pre-application
East Anglia TWO	Up to 900	12 to 19	Up to 75	Pre-application
Hornsea Project Four	1000	Unspecif-ied- blade tip height 370m above LAT	180	Pre-application
Atlantic Array 1 - Bristol Channel Zone	1,200	5.00	240	Application Withdrawn
Navitus Bay	970	5.00	121	Consent Refused

3.17. The consented/operational turbines capacities range from 3.6MW at Rampion (which was chosen for implementation instead of 5MW) through to 10MW at East Anglia THREE and 11.8MW at Moray West. The number of turbines in each commercial array range from 67 or 75 for the East Anglia and Seagreen arrays (although these join to form larger groups) to 480 at Dogger Bank Teesside A and B. The latter, along with a number of the other larger schemes, lie a long distance offshore.



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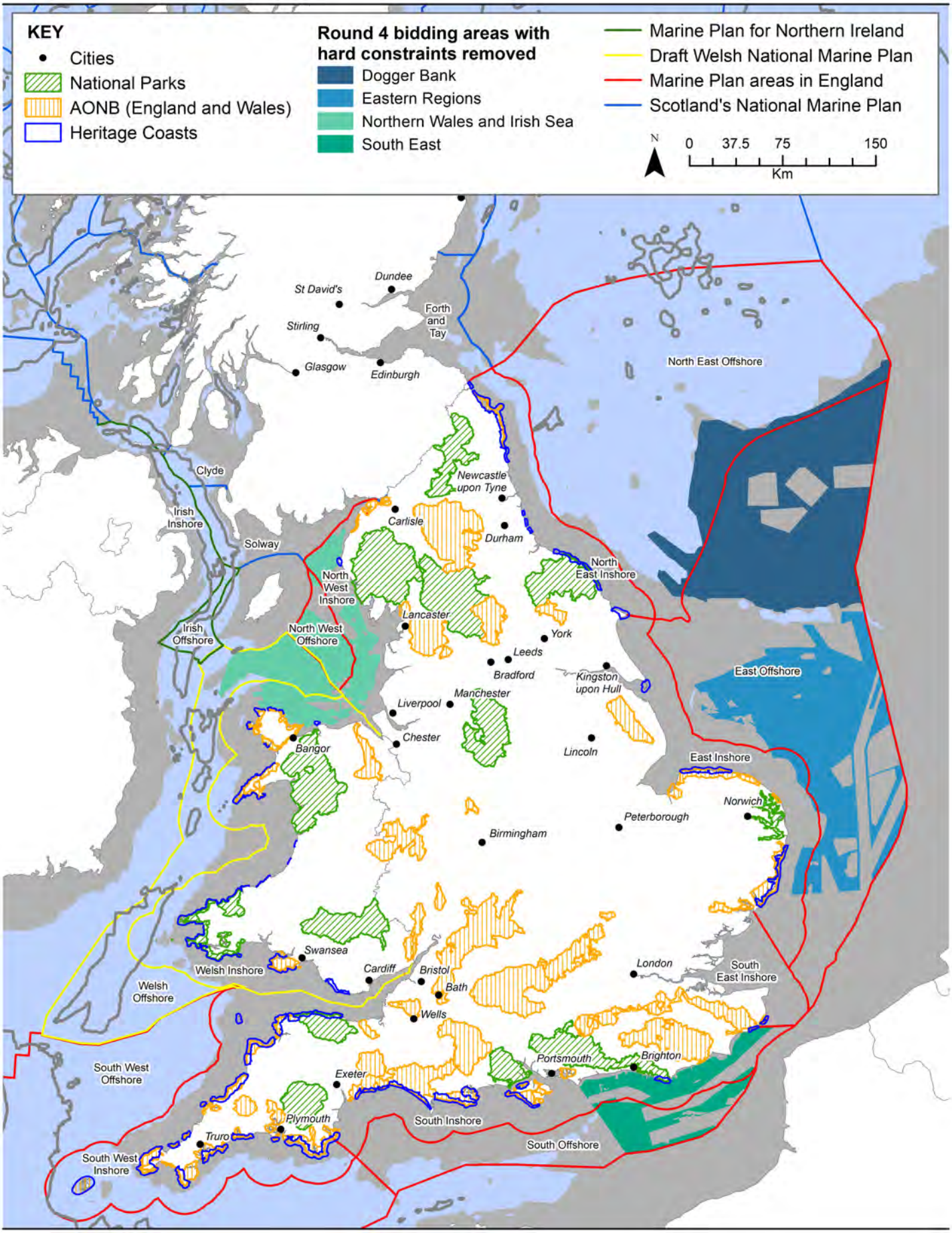
10/02/20 | v3 | Drawn: HK | Checked SW

Figure 3.1
Consented and operational windfarms and national landscape constraints



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10/02/20 | v2 | Drawn: HK | Checked SW

Figure 3.2
Round 4 offshore windfarm zones, marine plan areas, national landscape designations and Heritage coasts

Scottish Territorial Waters (STW) - schemes and draft plan options

3.18. At the time the Scottish territorial water leases were granted, the consenting regime was different for these waters, but Scottish Ministers now have full remit over renewables across their territorial and offshore waters. The following wind farms have been consented.

Table 3.5 Offshore wind farms in Scotland

Site Name	Installed Capacity (MW)	Turbine Capacity (MW)	No. of Turbines	Development Status
Hywind Scotland Pilot Park (Hywind 2) Demonstrator (Floating)	30	6.00	5	Operational
European Offshore Wind Deployment Centre (EOWDC) (Aberdeen Bay-Demonstration site)	100	10.00	10	Operational
Beatrice	581	7.00	83	Operational
Kincardine Offshore (Floating)	50	2 + 8.4	1 + 6	Construction
Neart na Gaoithe	450	8.3	54	Consent Granted
Inch Cape	784	min. 9.5MW	40-72	Consent Granted
Dounreay Tri demonstrator	10	5	2	Under construction but on hold

3.19. Hywind is a demonstrator project for floating turbines designed for deep water. EOWDC was designed to test a range of large scale turbines around 10MW and, as a demonstrator, is very close inshore (2-4km). The 11 turbines installed are two 8.8MW and nine 8.4MW units. The other three wind farms are commercial and use from 54 to 83 7-9.5MW turbines. Though they will be implemented in STW waters, some of these wind farms have been used in the SVIA analysis (**Chapter 7**) as they use large wind turbines and are representative of those deployed more widely across the UKCS.

3.20. The draft sectoral marine plan areas[1] for Scotland are being consulted on with draft plan options (DPOs) for offshore wind. The related Scottish Government (2019) SEA addresses seascape and visual amenity in a brief summary. It states that greater effects are likely for nearshore devices than those located further offshore and also for larger turbines with a greater height and thus greater visibility. It states that field observations revealed that turbines may be visible at distances of 42km in daytime and 39 km at night (5.1.54). They may be the focus of visual attention at distances up to 16km but these distances are considered to be influenced by turbine height and the shape of arrays relative to the coastline.

3.21. The SEA refers to the NRW (2019) report with 15km quoted as the maximum distance of medium effect (5.1.54). The text goes on to state that beyond this distance there is potential for mitigation through spatial planning, array design and turbine selection (5.1.55). 15km is then used as a yardstick in the assessment of every DPO. This does not take into account that the 15km is a buffer related to non-designated landscapes. This approach appears to be an oversimplification of the NRW (2019) report findings and does not fully take into account the increased adverse effects of larger turbines coming forward and their likely significant effects on high or very high sensitivity receptors at

[1] Https://consult.gov.scot/marine-scotland/draft-sectoral-marine-plan-for-offshore-wind/

distances far in excess of 15km as discussed in this report. Having said this, the SEA does comment on the existing baseline information on the sensitivity of individual DPO coastlines and the potential effects different types and scales of development (e.g. DPO W1).

3.22. The vast majority of the development plan options for offshore wind are in deep water, with a depth greater than 60m.The Hywind and Kincardine projects therefore appear to be very important to the future of offshore wind energy in Scotland. The implication is that if the technology can be mastered, it can also be deployed in the waters of England and Wales opening up areas hitherto unallocated for development. Areas would include the deep seas off the western seaboard peninsulas e.g. Cornwall, Pembrokeshire and Llyn as well as parts of the North Sea off the coast of north east England. In addition, those areas which have been found to be technically unfeasible/uneconomic for turbines with seabed foundations, such as the Bristol Channel Zone, may also become viable.

EXTENSIONS TO EXISTING WIND FARMS

3.23. In February 2017, The Crown Estate launched an opportunity for existing wind farms to apply for project extensions with a deadline of May 2018. Eight project applications were received, of which seven have now both been consulted on and passed the Habitats Regulations assessment stage (in August 2019). These are:

- Sheringham Shoal
- Dudgeon
- Greater Gabbard
- Galloper
- Rampion
- Gwynt y Môr
- Thanet

3.24. The developers will now progress with project specific environmental assessments before seeking planning consent through the statutory planning process.

CROWN ESTATE ROUND 4

3.25. The Crown Estate launched Offshore Wind Leasing Round 4 in September 2019. This is for at least 7GW of new seabed rights in four broad areas up to 60m water depth. This is significantly less than Round 3 but excludes Scotland. Leases for the areas will be for 60 years (extended from 50 years in previous rounds). A tender process commenced in October 2019 and will run until autumn 2020. The bidding areas (see **Figure 3.2)** are:

- Dogger Bank
- Eastern Regions
- South East
- Northern Wales and Irish Sea.

3.26. These areas have been derived from a two-stage regions refinement process reducing the 18 seabed regions initially identified. The reasons for removal and refinement have included visual sensitivity (i.e. where development would predominantly or entirely be within 13km off shore), defence ranges and exercise areas, overlap with busy shipping routes or potential cumulative environmental impacts risks particularly in relation to ornithology.

3.27. The analysis included a visibility analysis from four types of designations (National Parks, AONBs, Heritage Coasts and World Heritage Sites) that included some element of visual

protection or had landscape as a component of their protected features and subsequent review using the distance from shore thresholds mentioned in the OESEA3, 2016 report. These were 0-30km for high sensitivity receptors and three ranges for medium sensitivity receptors depending on size of turbine (0-13km for 3.6MW turbines, 13-20km for 4-8MW turbines and 20-30km for 10-15MW turbines).

3.28. In Region 6 Eastern area, for example, 18% of the overlaps with the 30km threshold from high sensitivity receptors (Suffolk Heritage Coast, Suffolk Coast and Heaths AONB and the Broads Authority). A qualitative assessment is made with the receptor rating judged as '*interaction acceptable with significant mitigation*' and an area rating judged as '*the constraint will present the need to implement significant and/or strategic level mitigation measures to enable acceptable development within the whole area*'.

3.29. Spatial modelling work was also run to look at the visibility of 250m and 350m high turbines from landscape designations but this does not seem to have been either quantitatively or qualitatively fed through into the area analyses. This is discussed further in Section 4 and illustrated in **Figure 4.6.**

3.30. Stakeholders raised concerns during the consultation process about the thresholds for significant visual impact in the OESEA3, 2016 report. The Crown Estate has maintained this as the most contemporary source available to characterise visual impact issues, but caveats have been noted in the methodology report and characterisation documents. This is the key issue that this report will address using up to date data and analysis. It should be noted that the OESEA3 report stated that 30 km was the limit of visual acuity rather than the limit of visual significance noted in the source White Consultants 2016 report.

CONSIDERATION OF SAMPLE WIND FARMS IN RELATION TO DESIGNATED LANDSCAPES

3.31. In order to explore the issues of the differing views of SVIA assessors and regulatory authorities and effects on national landscape designations we study the decisions and assessments of six wind farms. Three were included in the 2016 White Consultants OESEA3 background report and five were considered by the same consultants in their 2019 visual effects ready reckoner report for NRW[2]. These all remain relevant and are considered in date order:

- Race Bank, which was consented July 2012
- Atlantic Array, which was withdrawn November 2013
- Rampion, which was consented July 2014
- Walney Extension, which was consented August 2014
- Navitus Bay, which was refused June 2015
- Burbo Bank Extension, which was consented August 2015

Race Bank

3.32. The wind farm was given development consent in July 2012 by the Secretary of State without an inquiry. It was for 116 x 5MW wind turbines generating an capacity of up to 508MW. The development was located 27km offshore from the Norfolk Coast AONB at its nearest point.

3.33. The SVIA considered cumulative impacts of the proposed development alongside other offshore wind farms- Lynn and Dowsing, Lincs, Sheringham Shoal and the proposed

[2] White, S. Michaels, S. King, H. 2019. Seascape and visual sensitivity to offshore wind farms in Wales: Strategic assessment and guidance. Stage 1- Ready reckoner of visual effects. NRW Evidence Series. Report No: 315, 94pp, NRW, Bangor.

Docking Shoal. It stated that the development would add a significant number of turbines into the seascape. The effects on Norfolk Coast AONB, when considered on its own and in conjunction with the other wind farms, was stated to be of minor significance on the coast reducing to negligible moving inland.

3.34. In response to concerns about visual impact the developer referred to the DTI 2003 SEA report (mentioned earlier in this report) quoting 24km as a distance beyond which a low effect could be expected.

3.35. The Secretary of State concluded that cumulative visual impact of the proposed Development when viewed alongside other wind farm projects was not likely to be so significant that it required the Secretary of State to withhold consent for the Development.

3.36. Subsequent to this issue being raised the Developer amended the Original Application to reduce the proposed project in scale and gave a commitment to use a smaller number of larger turbines. The Secretary of State considered that these modifications together should have the effect of reducing the visual *extent* of the proposed Development.

Atlantic Array

3.37. The developer abandoned the Atlantic Array wind farm scheme in November 2013 and terminated the agreement with the Crown Estate due to technical challenges including substantially deeper waters and more adverse seabed conditions than expected.

3.38. The scheme lay within the Round 3 Bristol Channel Zone. The final assessed array was approximately 22.25 km from South Wales coast, 15.5km from the North Devon coast and 13.5km from Lundy Island. It was around 25.8km long by 12.6km wide at its extremities, amounting to around 200km2- greater than the Gower AONB (which is 188km2). The worst case scenario assessed in both the draft and final SVIAs was for 240 5MW turbines,180m to blade tip. The alternative layout of 150 8MW turbines, 220m to blade tip was also presented in visualisations. There was disagreement over which was the worst case with the NRW considering the larger turbines had a greater visual impact.

3.39. The decision to abandon the scheme came during the decision making process so assessments of visual impact had been carried out not only by the SVIA assessors, RWE, but also by bodies opposed to the scheme including, in Wales, NRW and the City and County of Swansea (Gower AONB), Pembrokeshire Coast National Park Authority (PCNPA) and the National Trust. A comparative table of effects on visual receptors in Wales is set out in **Appendix C.** This compares the three relevant consultants' viewpoint visual impact assessments. Data for the English viewpoints has not been obtained in this study as they are generally closer and less helpful in determining the limits of visual significance.

3.40. The SVIA assessor identified five significant effects on viewpoints in the two designated areas, two of which were small magnitude of change (at 27.5 and 27.9km) and three of which were medium magnitude of change(at 23.09-24.61km).

3.41. The PCNPA assessor identified six significant effects on viewpoints in the Park, all of which were medium magnitude of change (at 27.5-29.27km).

3.42. The NRW assessor identified eleven significant effects on viewpoints in the designated areas, six of which were moderate/slight (equivalent to small) magnitude of change (at 27.93-29.27km), three of which were moderate magnitude of change (at 24.61-27.9km) and two of which were substantial/moderate (at 23.09 and 23.74km).

3.43. The array proposed was very large even in its final reduced form, running parallel to the coasts. As it was sandwiched between designated areas either side of the Bristol Channel at relatively close proximity there was limited room to reduce effects on all sensitive visual receptors. Whilst this may not have been the reason for withdrawal, the seascape and visual effects would have been significant. There was agreement between both the

SVIA and other assessors that significant effects were possible from up to 27.9km away from the very sensitive viewpoint at Caldey Island.

Rampion

3.44. Rampion offshore wind farm was given development consent in July 2014. The development control order (DCO) specified that no turbine would exceed 210m above LAT or exceed a rotor diameter of 172m. The number of turbines was not specified but the extent of the wind farm was. The final approved layout extended around 13km by 6km.

3.45. The SVIA study area was formed on the basis that the development over great distances and 35 km would be unlikely to result in a perceptible change to seascape or landscape character.

3.46. The layout of the wind farm went through a number of iterations and three options were considered in the SVIA to determine a worst-case scenario (founded upon the 'Rochdale envelope' approach). These were for 3.6MW, 4MW at close spacings and 7MW turbines at wide spacings. The worst case was considered in the SVIA to be the 3.6MW array because of it extended further than the 4MW array but formed a denser array than the 7MW option. Two options showing a reduced array were developed- Option F with 175 3.6MW and Option D with 100 7MW turbines (see extracts of photomontages in **Figure 3.3** below). Natural England's evidence initially considered that Option D would be likely to be worse than Option F but at the hearing, put under some pressure to decide by the Examining Authority panel, agreed that Option F did represent the worst case (Planning Inspectorate, 2014, 4.329). This was mainly due to the spread of turbines being considered to be more intrusive than the height. However, this spread was only apparent from the east, from the more sensitive receptors such as Cuckmere Haven where the National Park meets the Heritage Coast, rather than from the receptors to the north. Otherwise the main difference was the wider spacing between turbines of the larger turbine array, albeit with larger structures.

3.47. The effects on the coastal settlement to Brighton and Hove at around 13km were considered of major and major moderate significance but the views were considered acceptable by the panel considering the urban context.

3.48. The effects on the South Downs National Park and Heritage Coast were considered also to be significant and more problematic. Whilst the National Park Authority considered that the effects could only be mitigated by removing the array altogether Natural England indicated that effects could be mitigated by locating it at a greater distance from the more sensitive parts of the National Park and Heritage Coast to the north east. There was discussion about the term remote and Natural England stated, when pressed by the panel, that anything over 20km could be considered to be 'remote'. By way of mitigation the applicant proposed a reduced array area increasing the distance from Cuckmere Haven beach from 17.5 km to 20.2 km, from Birling Gap from 19.6 km to 22.8 km and from Beachy Head from 23.3 km to 25.8 km. The level of significant effects were agreed to remain the same. Natural England also stated that they believed that the revised array would still compromise and be in conflict with the National Park landscape/seascape objectives.

3.49. The size of array actually to be constructed is further still from the Heritage Coast and uses a relatively small turbine of 3.45 MW.

Figure 3.3 Rampion wind farm- Comparative photomontage extracts from Cuckmere Haven

Top image: Option F with 175 3.6MW turbines. Bottom image: Option D with 100 7MW turbines

Source: Rampion Offshore wind farm: Additional visualisations of the array to include structures exclusion zone, E.On, 2013

Walney Extension

3.50. The wind farm was given development consent in August 2014. It was for up to 110 x 222m high 7MW turbines amounting to 750MW running north west from existing arrays at Walney 1 and 2 and West of Duddon Sands and with other wind farms such as Ormonde and Barrow closer to the coast. In addition, the oil and gas platforms related to the Millom and Morecambe fields are in the area. The development was located 19km away from the Cumbrian coast at its nearest point and 25km to the Lake District National Park.

3.51. The SVIA considered that the individual effects on the main assessed viewpoint in the National Park at 28km (Black Combe, Bootle Fell) would be medium-low magnitude resulting in a major/moderate to moderate significance effect. Overall, the effects on the National Park were considered negligible. With regard to combined cumulative effects, the effect on Black Coombe was considered to be up to major/moderate, depending on the scenario. The effect on the National Park was considered to remain negligible.

3.52. The Examining Authority panel visited the area including Black Combe when visibility was good to variable. Their experiences serve to underline the influence of meteorological and atmospheric conditions in limiting visibility. They were in general agreement with the SVIA's predicted magnitude of impact on considered that the experience on Black Combe would be unlikely to diminish due to the development.

Navitus Bay

3.53. Navitus Bay wind farm was refused consent in June 2015. The application layout was for 194 X 5MW 165m high turbines or 121 x 8MW 200m high turbines. This represented a reduction in size from the West of Wight Round 3 zone and the original layout option considered.

3.54. The SVIA study area was for up to 45 km from the array. The SVIA was prepared on the basis that the 8MW turbine option was the worst case due to the greatest theoretical extent of visibility. These were reduced to a 'turbine area mitigation option' (TAMO) of a maximum 105 turbines (if 6MW) during the course of the Examination period (The Planning Inspectorate, 2015, 7.4.5). The TAMO layout extended around 12.5km by 9.5km at its widest points.

3.55. There were a large number of national designations intervisible with the proposal in these were regarded by the Examining Authority panel as fundamental to the balance of judgement. They focused their attention on the receptors held to contribute to the qualities for which the AONBs or National Park designations were founded (The Planning Inspectorate, 2015, 7.3.8).

3.56. The TAMO increased the distance from these designated areas. These included the Dorset AONB and Purbeck Heritage Coast at Durlston Head from 14.3km to 18.8 km to the north west and St Adhelm's Head from 19km to 23.2 km; the Isle of Wight AONB and Heritage Coast: Tennyson Coast at The Needles from 17.6 km to 21.9km to the north east; and the New Forest National Park at Hurst Castle from 22.9km to 27.1 km to the north east.

3.57. Picking up from the Rampion Examination, the applicant claimed that anything over 20 km could be classed as 'remote' and that significant impacts on receptors would not occur at this distance or above. The panel disagreed with both points in relation to the Navitus Bay proposal as each case had to be looked at its own merits and the context of the project was considered to be different from Rampion.

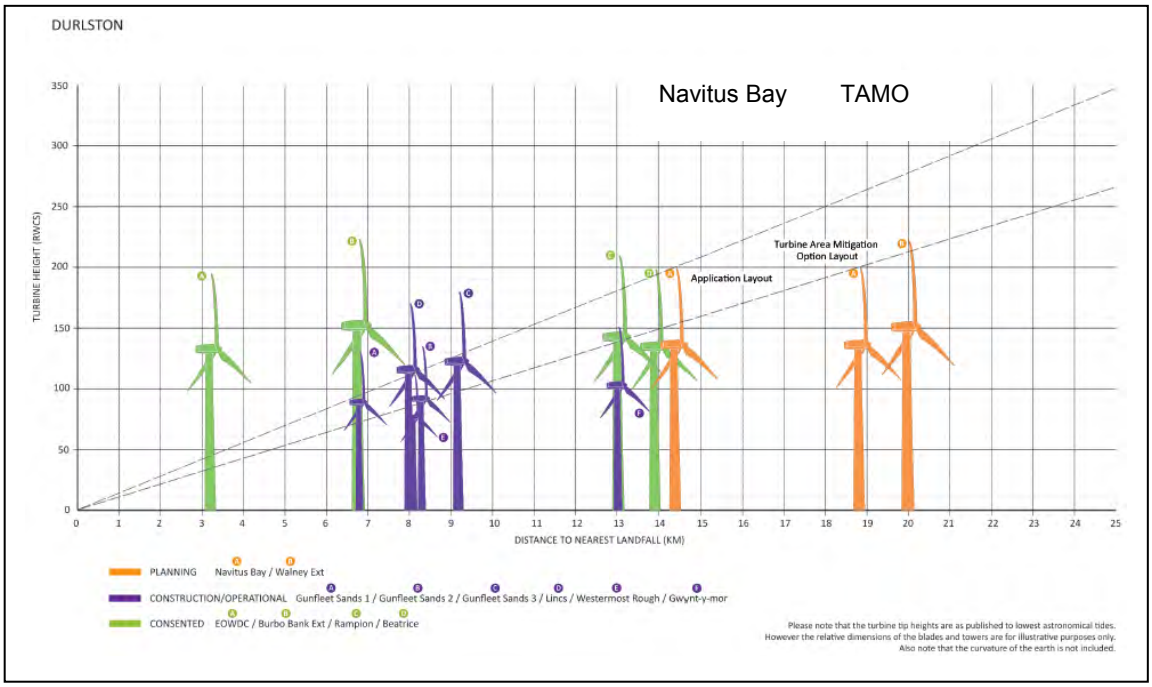
3.58. The appellant produced a number of diagrams comparing the height of turbines at various distances of the nearest turbine in the application layout, the TAMO and operational or consented turbines elsewhere which were closer e.g. EOWDC and Burbo Bank Extension (see **Figure 3.4** below). The diagrams did not state if any of the other wind farms affected national designated landscapes/coasts or make clear that EOWDC was a demonstration project. The approach did not appear to influence the panel's views and reinforces the need to consider the effects of proposals on their own merits.

3.59. In relation to visual effects the panel disagreed with the appellant's assessment to an extent considering that there were more significant effects (see **Appendix B** for detailed comparison). In addition, the panel considered that the array had a significant effect on a view from Hurst Castle in the New Forest at a distance of 27km as it interfered with the view of the Needles.

3.60. In respect of effects on the Dorset AONB and related Heritage Coast the panel considered that the proposal would be an imposing feature affecting key qualities of tranquillity, remoteness and uninterrupted panoramic views. It would maintain a continuous presence in views along the exceptional undeveloped coastline (including views from 19-23.5 km) and cause significant harm to the core qualities of the AONB and the Heritage Coast and the way they are experienced (7.4.38).

3.61. In respect of the Isle of Wight AONB and related Tennyson Heritage Coast, the panel considered that significant harm would be largely confined to sub-area A1 of the AONB. However because of the relative proximity to distinctive features such as The Needles (22km) and Tennyson Monument (23km) and Down and the role they play in the wider visual experience of the AONB, the qualities of the designations would be unacceptably and significantly harmed.

Figure 3.4 Navitus Bay- Comparing turbine heights and distance offshore with other schemes



Source: LDA, 2015, Navitus Bay, Response to Deadline V, Appendix 11 Update Turbine Height and Distance from Shore Comparison.

3.62. In respect of the New Forest National Park the panel felt that there was a significant effect on the view from Hurst Castle at 27 km towards the Needles. However, other views along the Solent Way were not considered significant and effects on the qualities of the National Park as a whole would not be significantly affected. This was agreed with Natural England. This is not surprising as Hurst Castle is at the most southerly point of the Park and the majority of the Park is inland and relatively flat, with the coast orientated south-east towards the Solent.

3.63. It should be noted that the effects on the Dorset and East Devon World Heritage Site (WHS) also contributed to the overall decision. Whilst this is a heritage designation with a different method of assessment of effects, there are overlaps with seascape and visual considerations. WHSs are experienced by people who enjoy views and their setting and they can also contribute to overall coastal seascape character. The Examining Authority noted that the management plan indicated that the experience of the site and its immediate setting, including views, contribute to the site's importance. They considered that the experiential aspects of the WHS could not be disassociated from the special qualities of the AONB (9.3.20) and were valid as a proxy for it. Overall they concluded that the harm caused to the setting of the Site, the 'less than substantial harm' to its significance and the harm to its Outstanding Universal Value carried significant weight against the decision to make the order (21.2.33). This conclusion also extended to the TAMO.

Burbo Bank Extension

3.64. The wind farm was given development consent in August 2015. This was for 36 x up to 223m high 7.5MW turbines which ran west from an existing array. 8MW turbines 187m high were installed. The development was located 15km away from the northern edge of the Clwydian Range AONB at its nearest point. The AONB itself extends south beyond the 40km SVIA study area boundary.

3.65. The SVIA considered that the individual and combined cumulative effects on the nearest assessed viewpoint in the AONB at 18.43km (Craig Fawr) would be medium magnitude resulting in a major/moderate significance effect. The other viewpoint assessed, Moel

Famau at 34.5km, was considered to undergo negligible effects. Overall, the effects on the AONB were considered negligible.

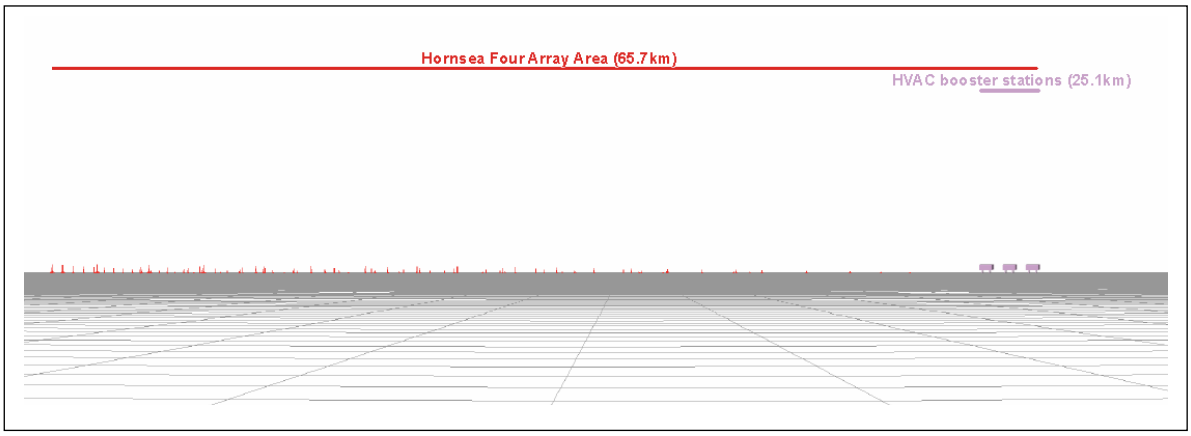
3.66. No specific instances of harm to the values of the AONB were raised in representations or evidence at the inquiry. The Inspector commented that he was satisfied that the proposal would be viewed from the northernmost extent of the AONB inland from Prestatyn and from upland outlooks in the Clwydian Range (4.133). However, these locations also provided views to other offshore wind farm developments and to substantial industrial and port development in Merseyside, Deeside and Cheshire. He considered that large areas of the AONB were affected by the application proposal to only the most minimal extent or not at all. In this context, he found that the purposes of the AONB designation would not be compromised by the application proposal.

CONSIDERATION OF ISSUES RELATING TO WIND FARMS LONG DISTANCES OFFSHORE

3.67. With increasing scales of wind farm development and distances offshore the study area limit for assessment of seascape/landscape and visual effects is increasing. The limits are defined at scoping stage as the distance beyond which it is considered that significant effects are unlikely to occur. As well as the size of wind farms and wind turbines other factors include visibility, meteorological conditions, the curvature of the Earth and visual acuity. In the past many offshore wind farms SVIAs have set a study area of 40km from the edge of development e.g. Greater Gabbard with 170m to blade tip turbines. This is increasing with increasing turbine height e.g. 45km for Thanet extension with 250m high turbines. East Anglia TWO wind farm used a study area of 50km for 300m high turbines, agreed with the Planning Inspectorate at scoping stage. The latter development's Preliminary Environmental Information Report (PEIR) discusses visibility and meteorological data in some depth (PEIR Appendix 28.7). This argues that there is a limit to visibility and likely significance of effect even for larger developments due to a range of factors. This issue relates to the limit of visual significance which will be discussed in Part 2 of this report.

3.68. Offshore wind farms require voltage to be stepped up by transformers in substations for transmission on shore. Wind farms at considerable distances offshore may require booster stations closer to shore. An example is Hornsea 4 where potentially three offshore high voltage alternating current (HVAC) booster stations up to 100m high are proposed at around 25km offshore compared to the 65km + of the wind farm offshore (see **Figure 3.5** below). If a DC export current type is used the substations will not be necessary. The HVAC substations have the potential to have a larger visual effect than the wind farm itself and would certainly be visible on a larger number of days due to visibility considerations e.g. haze etc (discussed in Part 2 of the report). The degree of significance of effect would be a matter for assessment on an individual basis. As the structures are relatively small in number and are substantially lower than the wind turbines they serve, they are not factored into the buffer distances for offshore wind farms in this report. They may only become a notable factor if there are cumulative effects with other substations or wind farms closer to shore. This should be monitored and considered in future OESEA reports.

Figure 3.5 HVAC booster substations in relation to offshore wind farm



Source: Hornsea Project Four: PEIR Volume 5, Annex 11.2: Seascape, Landscape and Visual Resources Visualisations. Viewpoint 1 Flamborough Head. (OPEN for Orsted).

Summary

3.69. Since 2009 there has been a very substantial increase in the number of turbines consented and implemented. The majority have been in the North Sea with the larger schemes long distances offshore. However, some demonstration schemes with large turbines have been consented close to shore. The average size of wind farm has increased and the consented/operational turbines capacities now range from 3.6MW through to 12.5MW. Elsewhere, developers have opted to implement schemes with smaller turbines, although they have a consent option to use larger turbines.

3.70. The first floating turbine wind farm used for deep water is now operational in Scotland- Hywind. The implication is that deeper waters off England and Wales may also now be considered for future search areas. These would include seas off the western seaboard peninsulas as well as parts of the North Sea off the coast of north east England. However, in the immediate future, the Crown Estate have launched Offshore Wind Leasing Round 4 for new seabed rights in four broad areas up to 60m water depth- Dogger Bank, Eastern Regions, the South East and Northern Wales and Irish Sea.

3.71. In the case studies, the following conclusions may be drawn:

- Medium magnitude of effects leading to major/moderate significant effects were accepted as significant by Examining Authority panels and inspectors.
- One significant visual effect on a visual receptor within a designated area does not necessarily mean that the effect on the area as a whole is significant or sufficient to withhold consent (e.g. Lake District/Walney).
- Where a designated area and its special qualities are entirely land based (as opposed to coastal) and where there is minimal relationship between the designation and the coast/sea then the effects are not likely to be significant (e.g. Clwydian Hills/Burbo Bank extension).
- Where other significant developments are located on the coast such power stations or larger urban areas the effects of offshore wind farms is reduced (e.g. Lake District/Walney, Clwydian Hills/Burbo Bank extension).
- Where there are existing offshore wind farms, inspectors tend to use this as a justification for allowing further development (e.g. Lake District/Walney, Clwydian Hills/Burbo Bank extension).
- Many proposals took the 'Rochdale Envelope' approach with options of smaller turbines covering a greater extent or larger turbines covering a more limited area. In some cases the former was considered the option having a greater effect.

- Where a proposed offshore wind farm is located along the coast from a designated area only allowing oblique views at more than 20km, effects were considered insufficient to withhold consent (Rampion).
- Where a designated area and its special qualities are related to the coast it is likely to be more sensitive to offshore wind energy (Dorset Coast, Isle of Wight AONB/Navitus).
- The combination of National Park or AONB, coinciding with Heritage Coast, appears to be considered as particularly sensitive (Dorset AONB and related Heritage Coast, Isle of Wight AONB and Tennyson Heritage Coast/Navitus).
- Where there are several designated areas directly overlooking an area of sea and affected by an offshore wind farm there is more likelihood of significant effects which are sufficient to withhold consent (Navitus).
- The maximum distance of a significant effect on a viewpoint influencing a refusal is 27km, with several other viewpoints with significant effects of over 23km being recorded (Navitus).
- It is clear that Examining Authorities and Inspectors take the view that each case is considered on its own merit.

4. Planning context and policy basis

4.1. Legislation formalising a marine spatial planning process has been established in the UK for more than ten years and policy is also being developed and implemented by agencies at a devolved regional level. In addition, terrestrial polices relevant to seascape and offshore wind farms have become established in England and Wales, such as National Policy Statements for nationally significant infrastructure projects. Policies may change in the light of the Climate Emergency declared by the UK Parliament on 1 May 2019.

4.2. This chapter concerns the legislation and polices which relate primarily to England's waters, although reference is made to other devolved administrations.

UK WIDE CONTEXT

Planning Act 2008

4.3. The Planning Act 2008 brought in a number of measures including National Policy Statements (NPSs) and the concept of Nationally Significant Infrastructure Projects (NSIPs). In respect of marine issues this was amended by the 2009 Act below.

Marine and Coastal Access Act 2009

4.4. The UK Government introduced eight key measures to help ensure 'clean, healthy, safe, productive and biologically diverse oceans and seas'. The measures included the introduction of a marine planning system and the setting up of the Marine Management Organisation (MMO) delivering marine functions in English territorial waters and UK offshore waters for matters that are not devolved. The Act requires that all public authorities should undertake planning decisions should do so in accordance with the Marine Planning Statement.

UK Marine Policy Statement

4.5. The Marine Policy Statement (MPS) was published in 2011 and acts as the policy framework for preparing marine plans throughout the UK. The UK vision for the marine environment is for *'clean, healthy, safe, productive and biologically diverse oceans and seas'* (2.1.1). The high level objectives (page 11, Box 1) include:

'….Ensuring a strong, healthy and just society:

- *People appreciate the diversity of the marine environment, **its seascapes**, its natural and cultural heritage and its resources and act responsibly…..' (my bold)*

4.6. The statement indicates that there is no legal definition of seascape but reiterates the European Landscape Convention (ELC) definition of *'an area, as perceived by people, whose character is a result of the action and interaction of natural and/or human factors'* (2.6.5.1). The text states that references to seascapes should be taken as meaning *'landscapes with views of the coast or seas, and coasts and the adjacent marine environment with cultural, historical and archaeological links with each other'*.

4.7. When considering the impact of an activity the marine plan authority (MPA) '*should take into account existing character and quality, how highly it is valued and its capacity to accommodate change...'(2.6.5.3)*. For any development relatively close to nationally designated areas such as National Parks, AONBs and Heritage Coasts, the MPA should have regard to the specific statutory purposes. Design should be taken into account as an aid to mitigation.

England-planning context

4.8. Four of the ten marine plans (South and East inshore and offshore) have been completed. The others are out to statutory consultation (the North West, North East, South West and

South East marine plan areas) (see **Figure 4.1**). The outstanding plans are to be adopted by 2021. The completed plans are discussed below. A significant proportion of the content of the early marine plans is inherited from existing approaches.

4.9. The **East Inshore and East Offshore Marine Plans** were the first two to be completed, in April 2014. The inshore area extends out from the mean high water mark to the territorial limit. The offshore area extends from the territorial limit to the boundary of the Exclusive Economic Zone. As part of the baseline, a seascape character assessment (MMO, 2012) was carried out identifying ten seascape character areas (SCAs). Policy SOC3 (page 58) states that proposals should demonstrate, in order of preference:

A) that they will not adversely impact the terrestrial and marine character of an area

B) how, if there are adverse impacts, they will minimise them

C) how, if they cannot be minimised, they will be mitigated against

D) the case for proceeding with the proposal if it is not possible to minimise or mitigate the adverse impacts

4.10. The Plans support offshore wind farms including Round 3 zones in Policy WIND2 (page 121).

4.11. The Seascape Character Assessment published in October 2012 was used as a pilot study to test the NECR105 approach to seascape assessment and formed the basis of NECR106. The report defines the boundaries of areas and describes their key characteristics, physical influences, cultural influences and aesthetic and perceptual qualities (see **Figure 4.2**). There is no assessment of sensitivity so the assessment is limited in use at assisting in determining buffers at an SEA level. Clearly it is useful for informing regional policies and SVIAs.

4.12. The South Marine Plan for the **South Inshore and South Offshore areas** was adopted in July 2018. Objective 9 is to consider seascape and its constituent marine character and visual resource, recognising the links with the adjacent landscapes. The contextual text specifically mentions designated landscapes.

4.13. The effects of development including offshore wind farms on seascape and landscape should be considered. This is stated as not only important for individual character areas, but also often for the contributions they make to nationally designated areas, and their setting (481).

4.14. The same test/policy wording for seascape (Objective 9, Policy S-SCP-1) is followed as for the East MPA Policy SOC-3, set out above.

4.15. The plan is supported by a seascape assessment (MMO Project Number – MMO1037 dated June 2014). This identified 14 marine character areas- three offshore and eleven roughly following the inshore boundary and apparently primarily defined by changes in the coastal character (see **Figure 4.2)**. Each area is described in an overview, with key characteristics, natural influences, cultural/social influences, aesthetic and perceptual qualities.

4.16. The intervisibility of the land and sea i.e. the degree of land with sea views and sea viewed from land are mapped. There is a concise description of the areas with the highest visibility. This work refines and builds on similar intervisibility mapping exercises carried out in Wales in previous studies in the early 2000s. MMO and NRW commissioned an expansion of the mapping to cover all of England's and Wales' territorial waters to produce a comprehensive and compatible dataset (see **Figures 4.3 - 4.5)**.

4.17. Overall, it is considered that the datasets help inform the relationship between land and sea and the description of seascape/marine character areas. High intervisibility may also be an indicator of sensitivity, especially where this occurs in a designated area. However, this is not necessarily the main determinant of sensitivity or importance and therefore has

to be treated with caution. Overall, this dataset is not considered to help determine potential visual buffers for offshore wind farms at a strategic level.

4.18. The national seascape assessment for England was published in September 2018. This included the remaining marine character assessments for the North West, North East, South West and South East marine plan areas. These are consistent in content with the South MPA.

Wales Planning context

4.19. The Welsh National Marine Plan has recently been published. The Wales Act 2017 means that consent for wind farms below 350MW is devolved to Welsh Ministers but those above are a matter for the UK government and remain of relevance to OESEA4. It is likely that the large-scale offshore developments associated with future developments will exceed the 350MW threshold.

National infrastructure planning- England and Wales

4.20. Since the Planning Act 2008 (as amended by the Localism Act 2011) responsibility for development consent applications for nationally significant infrastructure projects (NSIPs) has been passed to the Planning Inspectorate (PINS). PINS examine the applications and make recommendations to the Secretary of State at BEIS. Usually a panel of 3 or 4 inspectors make up the PINS 'Examining Authority'. Offshore wind farms with a capacity above 100MW are NSIPs.

4.21. National Policy Statements (NPSs) for energy were approved in July 2011. The NPSs applying to offshore wind farms are EN – 1 Overarching Energy and EN – 3 Renewable Energy Infrastructure. These are important as they set the framework within which PINS examine the landscape and visual impact of the proposed developments. (Seascape is taken to be within the meaning of landscape.) It should be noted that the NPSs have not been updated, for example to reflect devolution settlements.

EN-1

4.22. EN-1 states that the landscape and visual impact assessment (LVIA) should reference any landscape character assessments and associated studies and the 'visibility and conspicuousness' of the project and potential impact on views and visual amenity (5.9.7).

4.23. In terms of decision making, landscape effects will depend on the existing character of the local landscape, its current quality, how high it is valued and its capacity to accommodate change. The point is made that virtually all NSIPs will have effects on the landscape. Having regard to operational and other constraints, the aim should be to minimise harm to the landscape providing reasonable mitigation where possible and appropriate (5.9.8).

4.24. Nationally designated landscapes are confirmed as having the highest status of protection in relation to landscape and scenic beauty and their statutory purposes should be taken into consideration. The statement refers to development within these landscapes but also outside where they may be affected. The aim should be to avoid compromising the purposes of designations and such projects should be designed sensitively. However, the fact that a proposed project will be visible from within a designated area should not in itself be a reason for refusing consent (5.9.13). Some designated areas on the coast were specifically designated due to the land's relationship with the sea e.g. Pembrokeshire Coast National Park and Gower AONB. Others, which may run close to the coast but are designated for different reasons, may be considered to be less likely to be compromised.

4.25. Outside nationally designated areas, local landscape designations should not be used in themselves to refuse consent as this may unduly restrict acceptable development. The test is that the Examining Authority should judge whether any adverse impact on the landscape would be so damaging that it is not offset by the benefits of the project

(5.9.15). The reversibility of the development needs to be considered, as well as if the project has been designed carefully to minimise harm to the landscape.

4.26. The effects on sensitive receptors such as residents or visitors have to be assessed to establish if they outweigh the benefits of the project (5.9.18). Coastal areas are stated as being particularly vulnerable to visual intrusion because of potentially high visibility, effect on the skyline and on stretches of undeveloped coast. Examples of existing similar infrastructure should be used to assist decision-makers.

4.27. Reducing the scale of the project is cited as an option only in exceptional circumstances where mitigation could have a very significant benefit.

EN-3

4.28. EN - 3 specifically addresses offshore wind farms' seascape and visual effects. Seascape is stated as important resource and an economic asset in coastal landscapes which are often recognised through statutory landscape designations. The three principal considerations determining the likely effect of offshore wind farms are stated as:

- limit of visual perception from the coast;
- individual characteristics of the coast which may affect its capacity to absorb development; and
- how people perceive and interact with the seascape.

4.29. The assessment should be carried out in line with the DTI (2005) guidance. Where appropriate, cumulative SVIAs should be undertaken.

4.30. In terms of decision-making, consent should not be refused for development solely on the ground of an adverse effect on seascape or visual amenity unless:

- An alternative layout would minimise any harm;
- Taking account of the sensitivity of the receptors, the harmful effects are considered to outweigh the benefits of the proposed scheme.

4.31. It is expected that a reduction in scale of the wind farm is unlikely to be feasible due to the reduction in electricity generating capacity so, instead, the layout of the turbines should be designed appropriately to minimise harm (2.6.210).

4.32. For smaller projects (below 100 MW) the Marine and Coastal Access Act (2009) indicates that decisions are made by the Marine Plan Authority (MPA) – in the case of England, the Marine Management Organisation (MMO). When considering the impact of an activity it states that the MPA should take into account existing character and quality, how highly it is valued and its capacity to accommodate change (2.6.5.3).

Advice Note 9- Using the 'Rochdale Envelope (Version 3, July 2018)

4.33. When applying for a Development Consent Order (DCO) under the 2008 Planning Act, the developers will know the overall capacity of a wind farm but are unlikely to have decided on the turbine to be used. The choice of turbine influences the individual capacity, its height and rotor diameter, the resultant turbine spacing and foundation type, and the overall numbers of turbines. The 'Rochdale Envelope' approach is identified in EN-1 and EN-3 as a way of defining the worst case parameters in the DCO to allow flexibility. These parameters should identify the maximum and minimum likely number of turbines, the maximum and minimum hub and blade tip height and minimum separation distances to achieve a given maximum overall capacity within a defined area. The final implemented scheme may either have fewer larger turbines or a greater number of smaller turbines (but within the parameters set). As part of the process for assessing the likely seascape and visual effects, a range of possible options should be explored to a sufficient detail. These options should be consulted on allowing sufficient flexibility for changes to be

made. A cautious worst-case should be identified in order to feed in mitigation and to optimise the effects of the development on the environment.

4.34. The relevance to this study is that the worst-case scenarios in terms of seascape and visual effects differ in different developments. In some, larger turbines options are considered to be the worst case while in others a larger number of smaller turbines (e.g. 3.6 MW) at close spacings and/or a wider spread is considered worse than a smaller number of larger turbines with larger spacings (e.g. 7 MW). In the latter case it is not clear in some SVIAs what the likely effect of the larger turbines is. It also means that, using some SVIA evidence, it is possibly misleading to define different buffers for different sizes of turbines.

Consideration of designations

4.35. National Parks and Areas of Outstanding Natural Beauty (AONBs) originated under the National Parks and Access to the Countryside Act 1949 as amended by subsequent legislation including the Environment Act 1995 and Countryside and Rights of Way Act 2000 (CROW Act).

4.36. The designations were subject to a Landscapes Review published in 2019 (DEFRA). This made a series of recommendations including strong support for natural beauty, stronger purposes in law for national landscapes overall, renaming AONBs as 'National Landscapes' and giving them greater status in the planning system as statutory consultees, upgrading some larger AONBs to National Park status (including Dorset and East Devon), the formation of a new National Landscapes Service, updating the NPPF to reflect these changes and securing additional funding. The panel heard arguments in favour of further protection in relation to marine and coastal areas but did not include these in the final recommendations/proposals. Overall, this document's recommendations seek to strengthen these national designations.

4.37. The current statutory purposes of National Parks are to conserve and enhance the natural beauty, wildlife and cultural heritage of an area and to promote opportunities for the understanding and enjoyment of the special qualities of an area by the public. National Parks which reach the coast include Exmoor, Lake District, North York Moors, South Downs, New Forest and the Broads. These are illustrated in **Figures 3.1-3.2.**

4.38. The current statutory purpose of AONBs is to conserve and enhance natural beauty. AONBs on the coast are numerous and include North Norfolk Coast, Suffolk Coast and Heaths, Kent Downs, High Weald, Chichester Harbour, Isle of Wight, Dorset, East Devon, South Devon, Tamar Valley, Cornwall, North Devon, Quantock Hills, and Arnside and Silverside. These are also illustrated in **Figures 3.1-3.2.**

4.39. Where the reason for designation and the special qualities of the designations include the coast and/or seascape, the sensitivity of an area is increased and may merit increased buffers.

4.40. As part of the Round 4 regions refinement process, Crown Estate consultants undertook mapping of visibility from landscape designations for turbine tip heights of 250m above sea level (The Crown Estate, 2019 (1) and (2)). The designations included National Parks, AONBs, Heritage Coasts and World Heritage Sites. The mapping was intended to inform visual sensitivity and explored the degree of intervisibility of the sea from the designations (see **Figure 4.6**). However a number of limitations were identified with this approach as a proxy for sensitivity. Firstly, the shape of the designation influenced visibility, with Heritage Coasts as narrow strips of coastline and headlands giving a lower intensity of intervisibility than embayed areas. Second, there was insufficient assessment of sensitivity of each landscape designation to views. Finally, the complexity of the mapping was considered difficult to convert into buffers. Therefore, the mapping was given limited weight in the constraint analysis. Heritage Coasts were established to conserve the best stretches of undeveloped coast in England. These are non-statutory

landscape definitions agreed between Natural England and the relevant maritime authorities. They comprise of areas of coast more than 1 mile in length. Their purpose is to conserve, protect and enhance the natural beauty of the coastline and related flora and fauna and heritage features. They often overlap with National Parks and AONBs, reinforcing the importance of these coasts. They also occur in their own right where the hinterland does not have national landscape status. Examples of this include Lundy, the Durham Heritage Coast, Spurn Head and Flamborough Headland. Here they are important considerations and may merit an enhanced buffer depending on the reasons for their designation. Some may be more sensitive than others.

4.41. World Heritage Sites are designated by UNESCO according to their natural (physical, biological, geological) or cultural (historic, aesthetic, archaeological monuments and structures) attributes and should be considered to be of 'outstanding universal value'. Coastal related sites include the Dorset and East Devon Coast (Jurassic Coast) and Cornwall and West Devon Mining Landscape. It is suggested that these should be considered in two separate ways. Those that are large scale and/or substantially natural should merit buffers as for AONBs. Smaller sites can also merit buffers where the landscape/seascape setting and important views along the coast or offshore are stated as contributing to the site's designation. This may also apply where the site contributes to seascape character and the wider sensitivity of a seascape. These may merit an intermediate buffer depending on the reasons for designation.

4.42. The use of 'blanket' buffers on land outside a designation, such as National Park and AONB, is not normally supported by government planning decisions although the effects on statutory designations are considered important as indicated above. This approach may be justifiable onshore where there is potential for development to be screened by intervening landform or landcover. Offshore, there is no such screening from the coast outwards so buffers may have more justification. In cases where there is virtually no intervisibility, there may be a case for no buffers over and above that for medium sensitivity coastline. Areas such as The Broads may come into this category.

4.43. It is worth restating that buffers are a strategic level tool to identify where effects are likely and do not necessarily suggest no-go areas for development. These areas would need to be subject to careful further assessment should development be proposed within them.

4.44. There is an important distinction to be made between the contribution different sorts of designations make to a 'value' of a given seascape character area and the consideration of strategic buffers around individual designations. The purpose of this study is to consider the latter.

4.45. The effect of designations on potential buffers is dependent on the statutory importance of the designation in question. The only national statutory landscape designations in England and Wales are National Parks and AONBs. These merit large buffers as high sensitivity landscapes.

4.46. Local landscape designations may be related to the special qualities of the coast or seascape. However, they are considered to be too inconsistent to merit blanket treatment as high sensitivity receptors and though locally important do not justify buffers in their own right.

4.47. The presence of a National Trail should be considered as an indicator of sensitivity and buffers greater than that already provided by non-designated areas may be justifiable. However, there is a completed coast path around Wales and a coast path around England is scheduled to be completed in 2020. This does not mean that the entire coastline has equal sensitivity, potentially with more recent stretches having a lower sensitivity than established routes such as the South West Coast Path. The coast paths will pass through a variety of areas with different associated value and sensitivities and the sensitivity of

walkers is likely to generally reflect the area they are passing through. However, the fact that more people have access and are walking on these paths to enjoy views of the seascape is an important consideration.

4.48. Weighting of different designations for buffers in their own right was considered as part of the OESEA3 background report (White Consultants) as follows in **Table 4.1.**

Table 4.1 – Buffers in relation to Designations

Designation	Value to seascape	Effect on Buffer size
National Parks	Very High	large
AONBs	Very High	large
World Heritage Sites (*Landscape* size- e.g. Dorset and East Devon Coast)	Very High	large
Heritage Coasts	High	medium-large
National Trails (established paths prior to full Coast Path implementation e.g. South West Coast Path)	High	medium-large
World Heritage Sites (e.g. coastal castles, forts and ancient sites)	Medium- high	Contribute to capacity of marine character area
Large scheduled monuments	Medium- high	"
Historic Parks and Gardens	Medium- high	"
Local landscape designations	Medium- high	"

4.49. The OESEA3 background report (White Consultants) also suggested that overlapping of designations could be handled by applying the highest weighting. A key overlap was considered to be Heritage Coasts and AONBs/National Parks.

4.50. The OESEA3 White background report brought together buffers in a simplified form for small and medium – large offshore wind farms respectively. This concentrated on the 30 km buffer around National Parks or AONB's combined with Heritage Coasts with a lower distance buffer for medium sensitivity coasts. The intermediate buffers for single landscape designations were not illustrated. It was noted that the simple consideration of even distance buffers might not identify all areas which could be sensitive. These areas could include the Bristol Channel near to Lundy. Similarly, developments directly offshore from the most sensitive coasts may not be appropriate beyond 30km but maybe appropriate along the coast of medium sensitivity coastlines at lower distances. The main OESEA3 report simplified the reporting to include all National Parks, AONBs, Heritage Coasts and World Heritage Sites as high sensitivity receptors with other receptors as medium.

Summary

4.51. The Marine and Coastal Access Act 2009 introduced a system of formal marine planning in the UK. The UK Marine Policy Statement sets out the overall framework. A significant proportion of the content of marine plans, particularly the early plans, is inherited.

4.52. Seascape is a consideration and marine plan authorities should take into account existing character and quality, how highly it is valued and its capacity to accommodate change. Two Marine Plans in England have been completed with the rest at having completed

preliminary consultation stages. All associated national level seascape character assessments have been undertaken. These do not evaluate the sensitivity of seascapes and therefore cannot be factored into potential buffers at the SEA level.

4.53. The Welsh National Marine Plan has recently been published. The Wales Act 2017 means that consent for wind farms below 350MW is devolved to Welsh Ministers but those above are a matter for the UK government. It is likely that the large-scale offshore developments will exceed the threshold.

4.54. National Policy Statements EN-1 and EN-3 address national infrastructure planning in relation to renewable energy including offshore wind farms with a capacity above 100MW (or 350MW in Welsh waters). Nationally designated landscapes are confirmed as having the highest status of protection and their statutory purposes should be taken into consideration. Outside nationally designated areas, local landscape designations should not be used in themselves to refuse consent. The 'Rochdale Envelope' is a pragmatic approach to define the maximum parameters of a wind farm and constituent turbines as part of the consenting process. It illustrates that a range of sizes and numbers of turbines can be consented, although the worst case scenario is assessed within SVIAs.

4.55. National Parks, AONBs, Heritage Coasts and landscape-scale World Heritage Sites are the key designations relevant to consideration of wider visual buffers.

4.56. Policies may change in the light of the Climate Emergency declared by the UK Parliament on 1 May 2019.

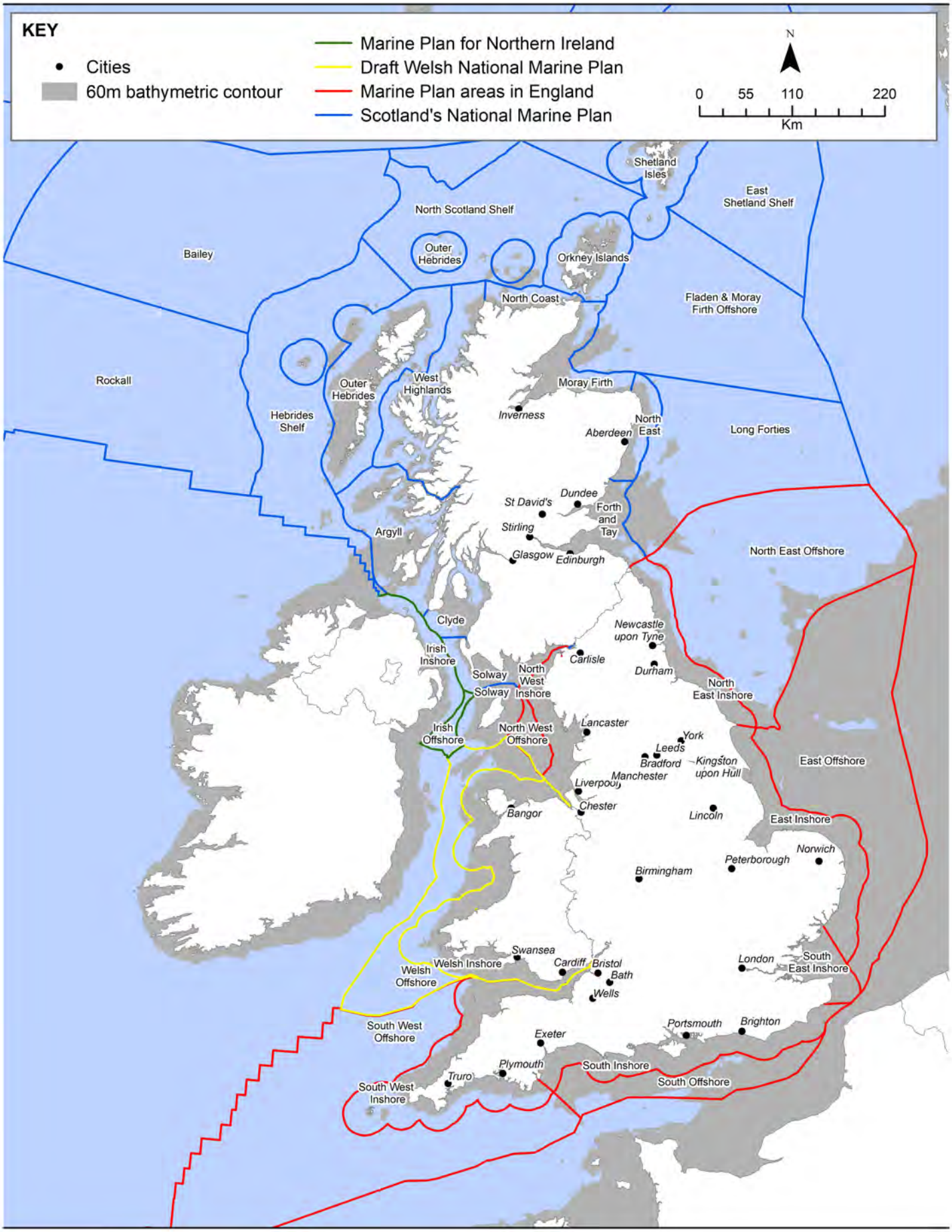


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Figure 4.1
Marine Plan Areas

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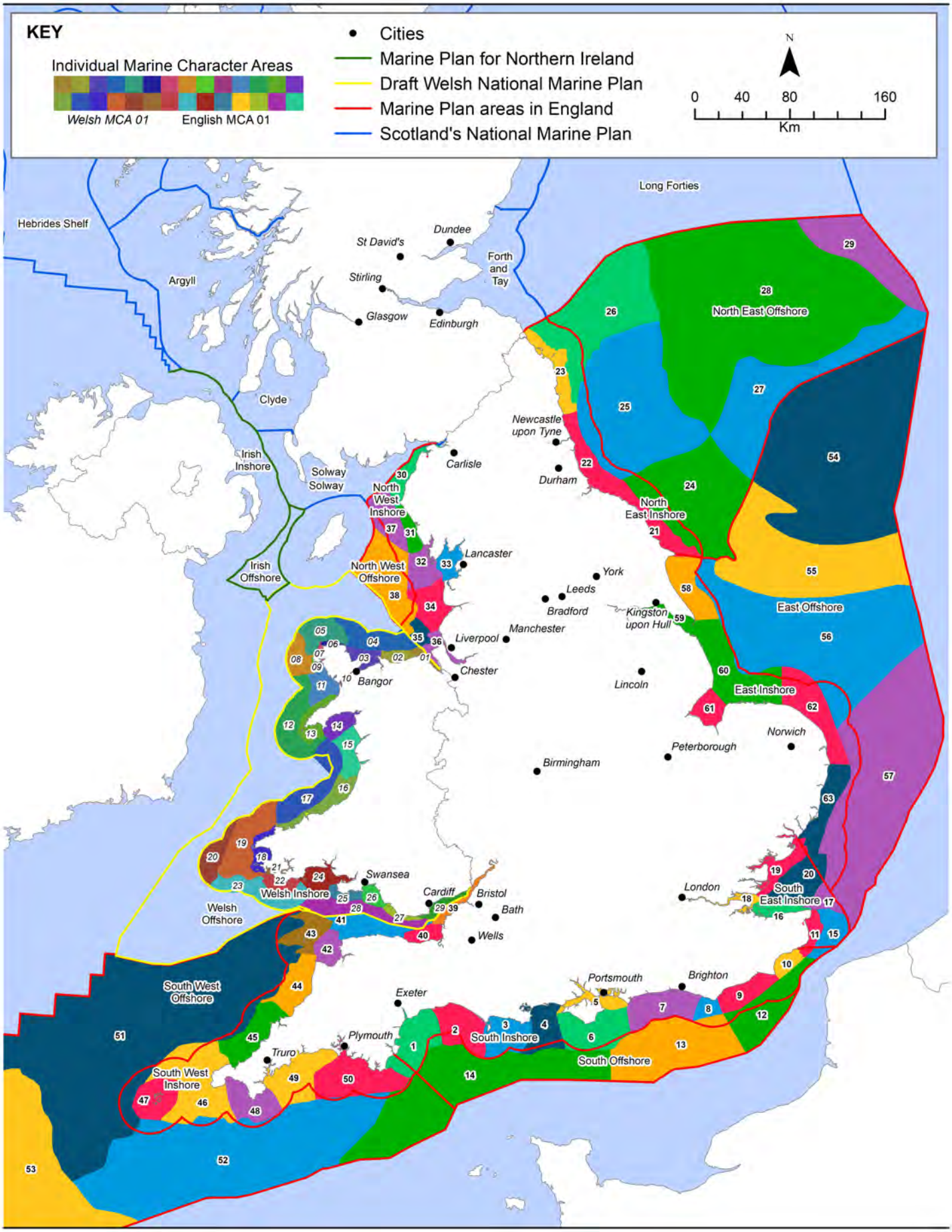

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Figure 4.2
Marine plan areas - Marine character areas

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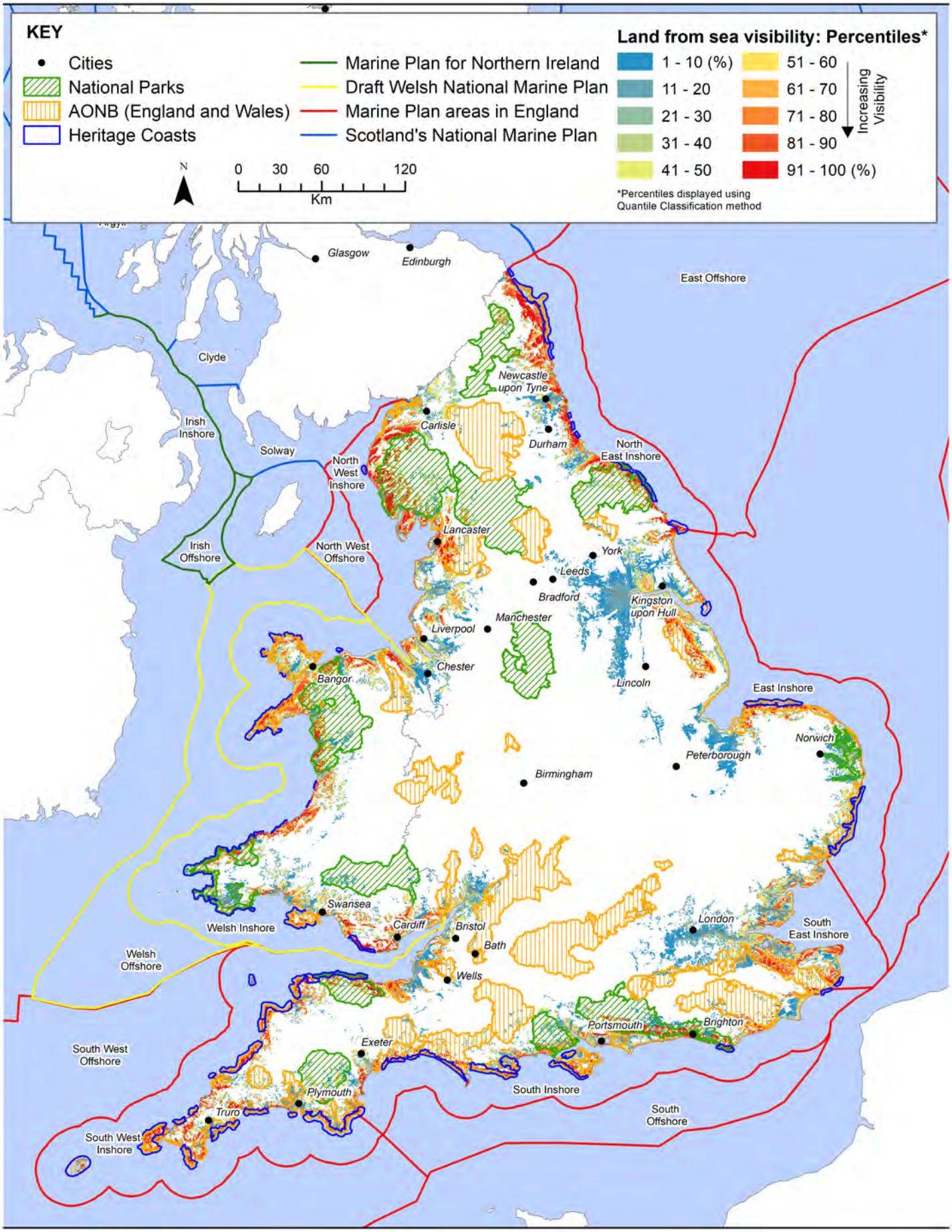

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Figure 4.3
Viewshed intervisibility of land from the sea

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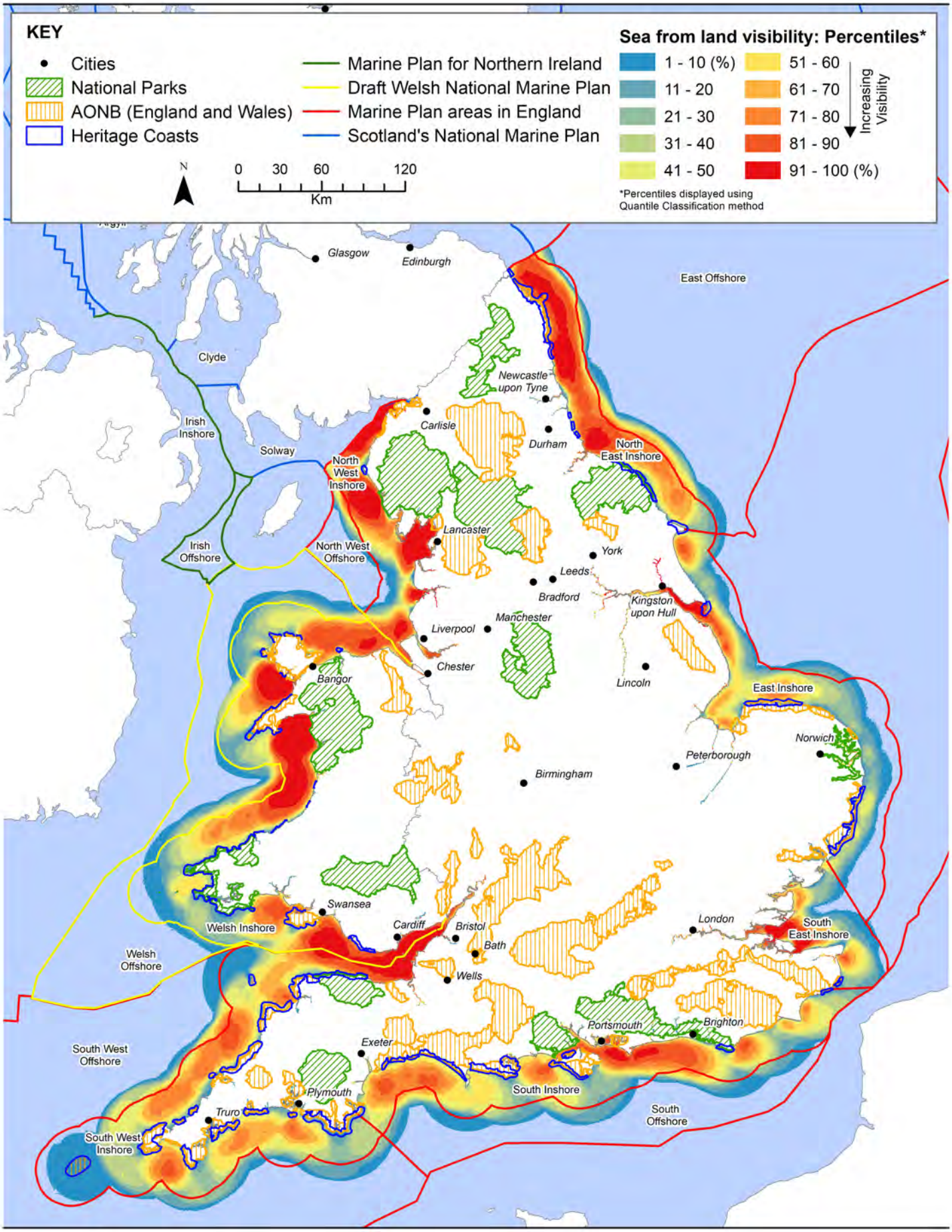

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Figure 4.4
Viewshed intervisibility of the sea from land

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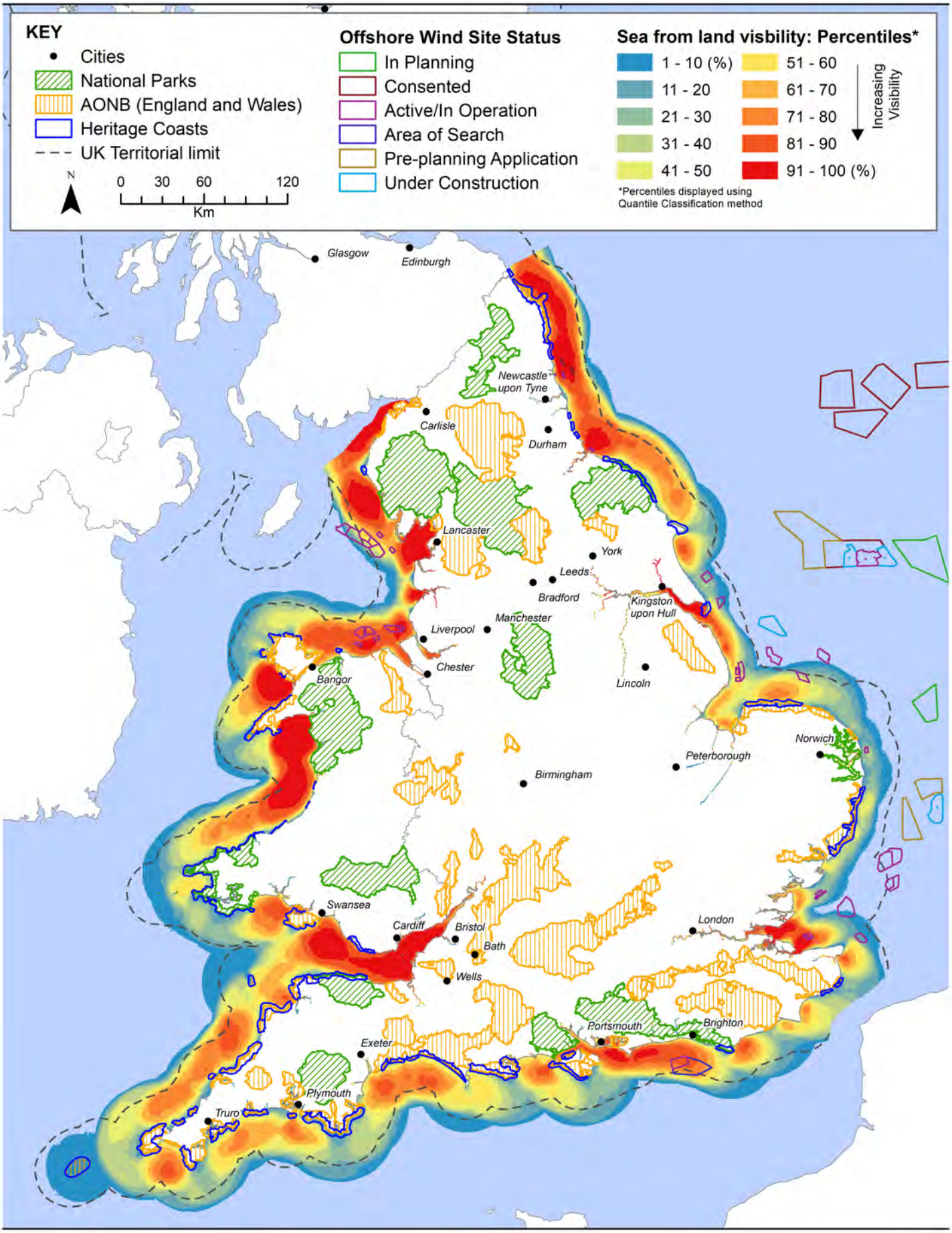

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Figure 4.5
Intervisibility of the sea from land

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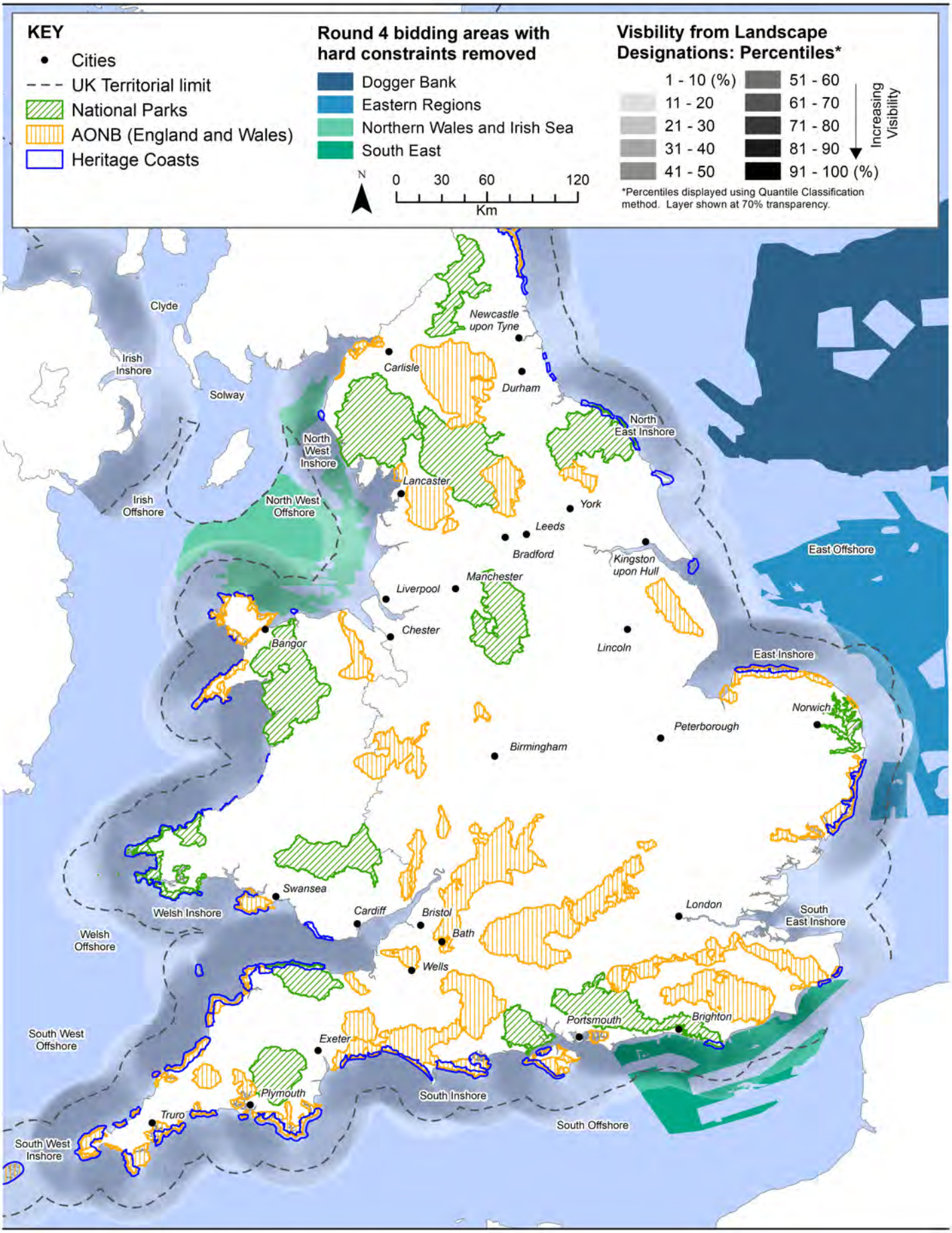

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Figure 4.6
Round 4 offshore windfarm zones, with visbility from landscape designations model

5. Seascape and visual impact guidance

5.1. There are a number of guidance documents which are used to assess the seascape and visual impact of offshore wind farms. Some guidance has been used for some time whilst others have been updated since 2016. Most SVIAs refer to a number of documents to derive their project specific methods. The key guidance relevant to offshore wind farms is set out below.

Guidance on the assessment of the impact of offshore wind farms: seascape and visual impact report, (DTI, 2005)

5.2. This document is referred to specifically in relation to offshore wind farms in EN-3. The purpose of the seascape assessment method is to inform environmental impact assessment and therefore focuses at a detailed level. The document covers the recommended process of assessment, baseline studies required, sensitivity, predicting impacts and their magnitude, assessing significance and cumulative impacts.

5.3. Definition of a seascape unit is based broadly on the CCW Hill et al (2001) approach for a regional scale unit which is considered appropriate for assessing offshore wind farms. Whilst this is still used in Scotland, in England and Wales this has been replaced by the NECR 105 approach which defines marine character areas. This is discussed in a separate section below.

5.4. A fieldwork stage is regarded as essential for this level of assessment. Principles of visual perception are discussed including clarity, harmony, current contrast, and scalability. Key views are regarded as an essential component of data collected using a 35km seaward limit of visual significance.

5.5. The sensitivity of a seascape unit is defined as following the SNH (2005) study. However, this is not entirely transferable to England and Wales due to the NECR105 method on seascape character. However, the latter does not give guidance on this issue and so until more guidance is given (see MMO reference below) the principles are relevant.

5.6. Consideration of magnitude of change identifies quantifiable parameters which include distance, number and proportion of turbines visible, proportion of field of view and navigational lighting. Less quantifiable parameters include arrangement of turbines, background, aspect and weather and prominence of other built features in the view.

5.7. The report cites the Round 2 SEA Study (2003) in terms of thresholds for significance but states that a proposal for 100 turbine wind farm with 150m high turbines will have a different limit of visual significance to a proposal for 30 turbines 100m high. In order to inform decisions on magnitude of effect, it lists a series of factors (Figure 25, p75). These include:

Table 5.1 – Factors that tend to decrease or increase apparent magnitude

Factors that tend to decrease apparent magnitude (*sample*):	Factors that tend to increase apparent magnitude (*sample*):
Long-distances;	Short distances;
Small proportion of horizon occupied;	Large proportion of horizon occupied;
Small percentage of development visible;	Large percentage of development visible;
Integration through siting;	Strong contrast due to poor siting or layout;
Skylining;	Backgrounding;
Low visibility;	High visibility;
Absence of visual clues;	Visual clues;

Wind farm not focal point; Complex scene; Low contrast; and High elevation.	Wind farm is focal point; Simple scene; High contrast; Low elevation; and Night-time lighting.

5.8. Useful definitions of magnitude of change are set out to assist consistency of approach in **Table 5.2.** These are derived originally from the University of Newcastle Study (2002).

Table 5.2 – Magnitude of change: names, descriptors and definitions

Magnitude/ size class	Other terms used	Name	Descriptors – appearance in central vision field	Definition
Very Large	High, very high substantial, very substantial,	Dominant	Commanding, controlling the view, foremost feature, prevailing, overriding	Proposed offshore wind farm causes very large alteration to key elements / features / characteristics of the baseline seascape or visual conditions (pre-development) such that there is a fundamental change.
Large	Medium- high, moderate - substantial	Prominent	Standing out, striking, sharp, unmistakeable, easily seen	Proposed offshore wind farm causes large alteration to key elements / features / characteristics of the baseline seascape or visual conditions (pre-development) such that there is an unmistakeable change.
Moderate	Medium	Conspic-uous	Noticeable, distinct, catching the eye or attention, clearly visible, well defined	Proposed offshore wind farm causes moderate alteration to elements / features / characteristics of the baseline seascape or visual conditions (pre-development) such that there is a distinct change.
Small	Low, slight, minor	Apparent	Visible, evident, obvious, perceptible, discernible, recognisable	Proposed offshore wind farm causes small loss or alteration to elements / features / characteristics of the baseline seascape or visual conditions (pre-development) such that there is a perceptible change.
Very Small	Low, slight or minor-negligible	Inconspic-uous	Lacking sharpness of definition, not obvious, indistinct, not clear, obscure, blurred, indefinite, subtle	Proposed offshore wind farm causes very small loss or alteration to elements / features / characteristics of the baseline seascape or visual conditions (pre-development) such that there is a distinguishable change.
Negligible		Faint	Weak, not legible, near limit of acuity of human eye	Proposed offshore wind farm causes negligible loss or alteration to elements / features / characteristics of the baseline seascape or visual conditions (pre-development) such that there is no legible change.

5.9. These terms are considered to remain valid and are used frequently in SVIAs. They are also used in the wireline analysis in this study.

5.10. Significance is derived from combining the sensitivity of a receptor and the magnitude of change. **Table 5.3** sets out how this is suggested in the guidance:

Table 5.3 - Significance of effects

Landscape and visual sensitivity	Magnitude of change				
	Very large	**Large**	**Moderate**	**Small**	**Very small**
Very high	Major	Major	Major	Major/ moderate	Moderate
High	Major	Major	Major/ moderate	Moderate	Moderate/ minor
Medium	Major	Major/ moderate	Moderate	Moderate/ minor	Minor
Low	Major/ moderate	Moderate	Moderate/ minor	Minor	Minor/none
Very low	Moderate	Moderate/ minor	Minor	Minor/none	None

Note: Those boxes of significance of effects shaded orange are considered to be significant effects, those shaded yellow may be significant. Those which are not shaded are considered not to be significant.

5.11. This indicates that major and major/moderate effects are significant. It is stated that effects of moderate significance are most likely to be not significant, but it is feasible that they could be judged as significant, depending on the particular circumstances arising.

5.12. Navigation lighting is considered very much a secondary visual effect due to the curvature of the earth, association with shipping and the presence of few receptors at night. The report does not, however, address aviation lighting.

5.13. Climatic and atmospheric conditions are said to affect visibility particularly in coastal situations. Data should be obtained as part of the baseline for a seascape area including visibility over a 10 year period, using a visiometer. It should be used to influence the magnitude of visual change.

Guidelines for Landscape and Visual Impact Assessment (GLVIA3)

5.14. The Guidelines for Landscape and Visual Impact Assessment were revised in a 3rd edition in 2013 (Landscape Institute, 2013). The guidance defines seascape as per the UK Marine Policy Statement and states that any assessment should carefully consider the relationship between land and sea in coastal areas and also take account of possible requirements to consider the open sea (2.9). Methods to assess the character of seascapes are being developed and the latest available guidance should be referred to. The guidance text does not refer to the DTI (2005) guidance for assessing offshore wind farms. As such it is not considered to supersede it and both documents are relevant in the context of other emerging guidance and studies. A review of SVIAs for individual wind farms bears out this approach (e.g. Navitus, Rampion, Burbo Bank Extension).

5.15. The principle of determining **significance** of effect is through combining the consideration of the sensitivity of receptor with the magnitude of effect. Landscape/ seascape **sensitivity** is explicitly derived from combining the **susceptibility** of the receptor to a

type and scale of development with the **value** of an area. The latter is divided into international, national, local or community value.

5.16. The **magnitude** of seascape or visual effect (6.38-6.41) is stated as combining consideration of the *scale or size of effect* with the *extent* of the area affected and *duration/reversibility* of that effect. The size or scale of effect includes consideration of:

- the scale of change in the view including the proportion of the view occupied by the proposed development
- the degree of contrast or integration
- the nature of the view in terms of the relative amount of time over which it will be experienced on whether views will be full, partial or glimpses.

5.17. The geographical extent of the visual effect is likely to reflect:

- the angle of view in relation to the main activity receptor,
- the distance of the viewpoint from the proposed development
- the extent of the area over which the change would be visible (combining a number of viewpoints such as on a coastal footpath or over a designated area).

5.18. The duration and reversibility of visual effects considers the amount of time that the development is likely to be present and whether it can be removed at the end of that period. Offshore wind farm would normally be in position for 25 years + (within up to a 60 year lease period) and so this can be considered to be long term but reversible.

5.19. The first two factors of scale of change and extent overlap. For instance, the distance of a viewpoint from the proposed development will determine the scale of change in the view.

5.20. The relative weighting of the three main factors are not specifically discussed in the guidance. There are some practitioners who give them equal or almost equal weight. This means that there is potential for the overall magnitude of effect to be less than the scale of effect alone. However, others give most weight to the scale of effect and extent (in terms of distance). As offshore wind farms are long-term, the overall magnitude of effect is therefore often at the same level as the scale of effect. For a study of this nature, it is sensible to take the precautionary approach and consider that the scale of effect is likely to be at a similar level to the magnitude of effect.

5.21. The GLVIA discusses cumulative effects, setting out the alternative approaches of assessing the combined effects of existing and proposed developments or just the additional cumulative effects of a given development. Neither approach is given more weight than the other. It is considered that the combined effects of developments is the most important concern at a strategic level.

NECR105 An Approach to Seascape Character Assessment

5.22. NECR105 was published by Natural England in 2012. It is a very concise document which defines terms, sets out five principles of seascape character assessment (SCA) and carries out an overview of process and capacities. There is no detailed guidance on how to carry out a seascape character assessment. The principles are:

- Landscape is everywhere and all landscape and seascape has character
- Seascape occurs at all scales and the process of seascape character assessment can be undertaken at any scale.
- SCA should involve an understanding of how seascape is perceived and experienced by people.

- SCA provides an evidence base to inform a range of decisions and applications.
- SCA can provide an integrating spatial framework.

5.23. The process for SCA is stated as similar to landscape assessment resulting in the definition and description of Seascape Character Areas and Types with the coastal boundary being the High or Low Water Mark. The output provides a seascape character baseline from which the assessment of the effects of different types of development can be built using other guidance. Guidance on determining the sensitivity of an area is not given.

5.24. All the regional seascape character studies carried out for MMO and Natural England have followed this guidance. These have already been discussed in Chapter 4.

Seascape and visual sensitivity to offshore wind farms in Wales (NRW)

5.25. In 2019 NRW published a strategic assessment and guidance for seascape and visual sensitivity to offshore wind farms in Wales' draft Marine Plan areas. The purpose of the project was to influence and guide the siting of wind farms as part of the Crown Estate Round 4 process. Whilst this report only applies to Welsh waters it is relevant to this report.

5.26. The report is in three parts:

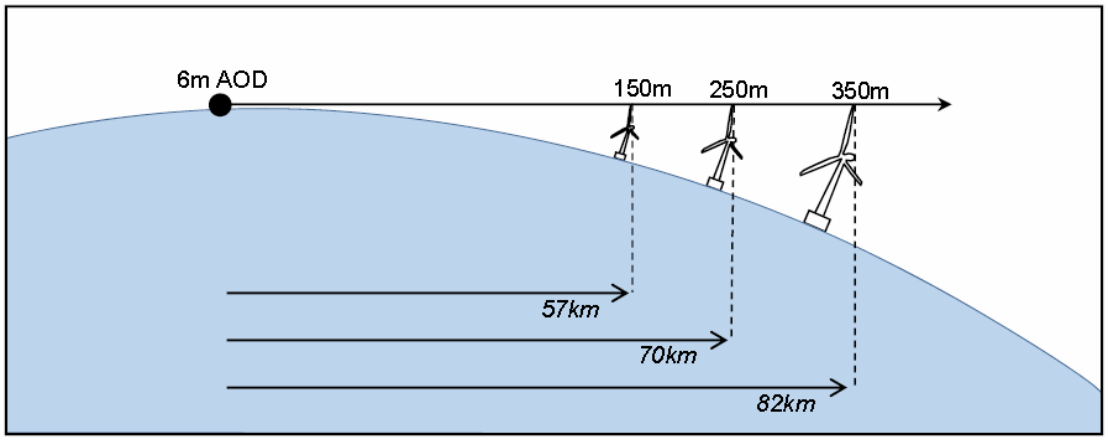
1. A visual effects ready reckoner showing the recommended distances from National Parks and Areas of Outstanding Natural Beauty (AONBs) in relation to different turbine heights up to 350m.
2. A guidance note setting out what offshore wind farm developers need to know in relation to seascape and visual effects at their site search stage.
3. A seascape sensitivity assessment for offshore wind farms in Wales' Marine plan area.

5.27. The most relevant to this study are Parts 1 and 3.

5.28. Part 1 researches and maps buffers for different heights of turbines required to avoid significant adverse effects on high sensitivity coastal visual receptors. The primary analysis reflects and builds on that carried out for the OESEA3 background study (White Consultants, 2016).

5.29. A series of factors are taken into account including physical factors such as curvature of the earth for a range of turbine sizes (see **Figure 5.1**). This indicates that large turbines can theoretically be seen above the horizon for long distances even when viewed from close to sea level.

Figure 5.1 Effect of curvature of the earth on visibility of turbine (Source: NRW (2019))



5.30. The SVIAs of 23 suitable offshore wind farms with turbines of different height are analysed. These are proposed or located in England's, Wales' and Scotland's waters. The ranges considered are low and medium magnitudes of effect. Combined with a high sensitivity receptor, a low magnitude of effect is likely to result in an effect of 'moderate' significance. A medium magnitude of effect is likely to result in an effect of 'major-moderate' significance. It is noted that that a moderate effect can potentially be significant, and that major-moderate is classified as significant in the vast majority of SVIAs. Both the average and maximum distance for low and medium magnitude of effect are recorded. Cumulative effects have also been noted and used where a wind farm is an extension to an existing large array.

5.31. The SVIA analysis only considers the effects of turbines up to 300m high due to the limited number of suitable SVIAs available during the research period. Therefore a wireline analysis for 350m high turbines is carried out. The wireline scenarios show an array of 350m high wind turbines in juxtaposition with arrays of 145m and 225m turbines where they all appear the same height. In theory, this means that the 350m high turbines at the located distance would potentially have a similar visual effect notwithstanding variable factors that affect visibility over distance such as haze.

5.32. The combined findings of the SVIA and wireline analysis are as follows:

Table 5.4 Summary of NRW SVIA analysis findings

Range of turbine heights to blade tip (m)	Low magnitude of effect *		Medium magnitude of effect	
	Average Distance km	Maximum Distance km	Average Distance km	Maximum Distance km
107-145	22.6	27.3	14.0	15.0
146-175	24.4	26.5	18.8	20.8
176-225	28.5	32.0	22.0	26.7
226- 300	41.6	52.7	27.9	31.4
301-350	44.0	-	32.8	-

*Low magnitude of effect also includes equivalent effect of slight or minor

5.33. The report notes that a very approximate rule of thumb ratio between turbine height and distance for an average low magnitude of effect is 1:133 and 1:100 for average medium magnitude of effect.

5.34. The Part 3 report refines the spatial analysis by zoning Wales' waters into zones with different sensitivity to offshore wind farms.The fifteen zones are defined on the basis of:

- The extent of visual buffers relating to designated landscape areas (National Parks and AONBs) - these inform the distances of the zones away from the coast.
- The presence or otherwise of existing wind farms, which affects seascape character.
- The geometry of the Welsh coastline, taking account of major headlands, major bays and the character of the coast.

5.35. The sensitivity of a zone to offshore wind farms is based on a series of criteria which are consistent with the guidance prepared in the Part 2 report. The criteria group the factors into value, seascape susceptibility and visual susceptibility. A summary of the sensitivity of each zone is provided, in relation to offshore wind farm development, and includes recommendations to minimise their visual effects.

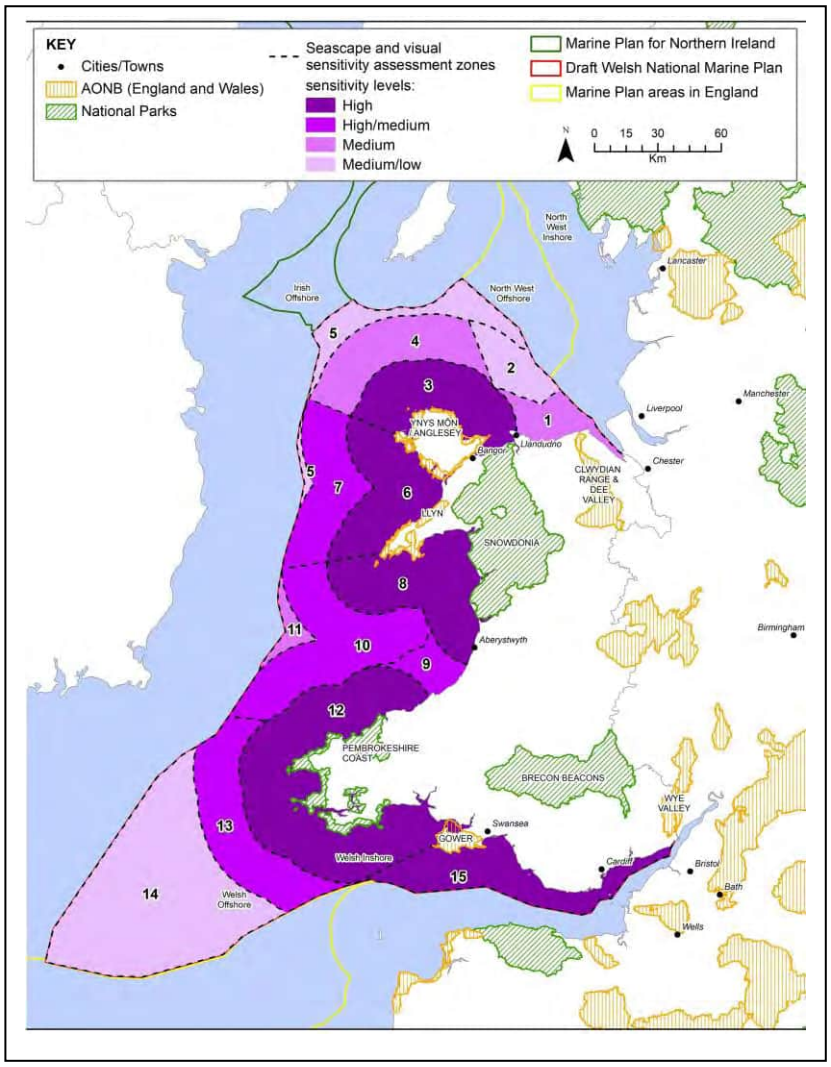
5.36. The zones are considered in groups of up to 22.6km, 22.6–44km and beyond 44km from the coast are shown in **Figure 5.1** below:

- **Up to 22.6km** from shore the sensitivity of seascape is generally considered to be high

for wind farm development except for the north east coast (**Zone 1**) which already has existing wind farm development. Here, some small extension of wind farms may be possible but scope is limited.

- **Between 22.6km and 44km** from shore the potential location for wind energy is dependent on the height of turbine and the likely extent of the overall wind farm. In **Zone 4** well-designed development may be possible and in **Zone 2** development beyond Gwynt y Môr would be tend to limit harm. In some areas, such as off the Pembrokeshire and Llŷn Coasts, it is considered harmful to have development in these zones (**7, 10 and 13**) as development would be visible and would adversely affect the special qualities, including setting, tranquillity and apparent wildness of these remote western coasts.
- **Beyond 44km** from shore the effects of most sizes of wind turbines would be limited although they may be visible in certain light and weather conditions. Development in **Zone 5** could be possible especially to the north east. Development in **Zone 11** may be possible although potential effects on Bardsey Island and the end of the Llŷn peninsula would need to be considered very carefully. Development in the majority of **Zone 14** would be likely to be possible although larger turbines in the areas closest to the Pembrokeshire coast and its islands may cause harm, again due to visibility in certain light and weather conditions.

Figure 5.2 Welsh designated landscapes, their seascape settings and their sensitivity to offshore wind farms



Source: Extract from Figure 7 Wales seascape sensitivity report, NRW, 2019

Approach to seascape sensitivity assessment (MMO1204)

5.37. MMO have recently published an approach to seascape sensitivity assessment (2019) which addresses the MPS statement *'In considering the impact of an activity or development on seascape, the marine plan authority should take into account existing character and quality, how highly it is valued and its capacity to accommodate change specific to any development.'* (Defra, 2011, Section 2.6.5.3).

5.38. The previous MMO seascape project, MMO1134, along with the Seascape Characterisation for the Marine Plan Areas 3 and 4, 2011, have fulfilled the initial part of the MPS seascape requirements, namely 'existing character'. This project therefore considers quality, value and capacity to accommodate change.

5.39. The document sets out a process which is complementary to Natural England's (2019) approach to landscape sensitivity. Sensitivity is derived from a combination of the seascape character and visual susceptibility of a defined seascape marine character area/seascape character area to a given type and scale of development, combined with the value of the area. To achieve this, the process indicates that a development type should be described, and then judgements made against relevant criteria and associated indicators which contribute to making an area more or less susceptible. The method is intended to be tested and then could be used to inform strategic seascape sensitivity assessments and the sensitivity element of SVIAs. There are no current plans for undertaking sensitivity assessments in the waters around England.

5.40. The relevance to this study is that MMO recognise seascape character as a factor to be considered alongside visual considerations such as buffers in influencing the location and design of offshore wind farms and other marine developments.

SUMMARY

5.41. The publication 'Guidance on the assessment of the impact of offshore wind farms: seascape and visual impact report' (DTI 2005) remains as key guidance in assessing the effects of offshore wind farms. Its consideration of magnitude of change identifies quantifiable parameters which include distance, number and proportion of turbines visible, proportion of field of view and navigational lighting. Less quantifiable parameters include arrangement of turbines, background, aspect and weather and prominence of other built features in the view.

5.42. GLVIA3 (LI, 2013) provides general guidance on landscape and visual impact assessment. This considers the factors influencing sensitivity and magnitude of effect. The three main factors affecting visual magnitude of effect are defined as scale of effect, extent and duration but their relative weighting is not specifically discussed. Scale of effect and extent overlap to an extent and as offshore wind farms are long-term, the overall magnitude of effect is therefore often at the same level as the scale of effect. For a study of this nature, it is sensible to take the precautionary approach and consider that the scale of effect is likely to be at a similar level to the magnitude of effect.

5.43. NECR105 defines the approach to seascape character assessment in England and Wales. It is a very concise document which gives no detailed guidance. The marine character areas now completed for all the Marine plan areas are derived from this approach but do not include an evaluation of sensitivity and so have limited value for strategic level assessment although inform more detailed assessments. Strategic sensitivity assessments using MMO1204 in English waters would be helpful although none are planned.

5.44. The Welsh seascape sensitivity study specifically considered buffers to offshore wind farms with wind turbines up to 350m high to blade tip. This built on previous OESEA seascape studies and its findings are of interest and relevance.

5.45. Our interpretation of the threshold of no significance remains the same as for the previous studies (White Consultants, May 2009 and 2016). It is derived from a 'worst case' scenario in the DTI (2005) seascape and visual impact assessment guidance which states that effects of moderate adverse significance could be judged as significant (although it is most likely they are not). Taking a precautionary approach our research defines the point where the visual effect of an offshore wind farm development changes from one of moderate significance to minor-moderate significance. In practice it is difficult to be precise because effects change depending on the size of the wind farm, the viewpoint, the viewer, and weather conditions. Beyond this threshold, wind farms are still likely to be visible in clear conditions. The method, variable factors and findings are discussed in more detail in the report.

6. An updated International perspective

EXTENT OF RESEARCH AND OVERVIEW

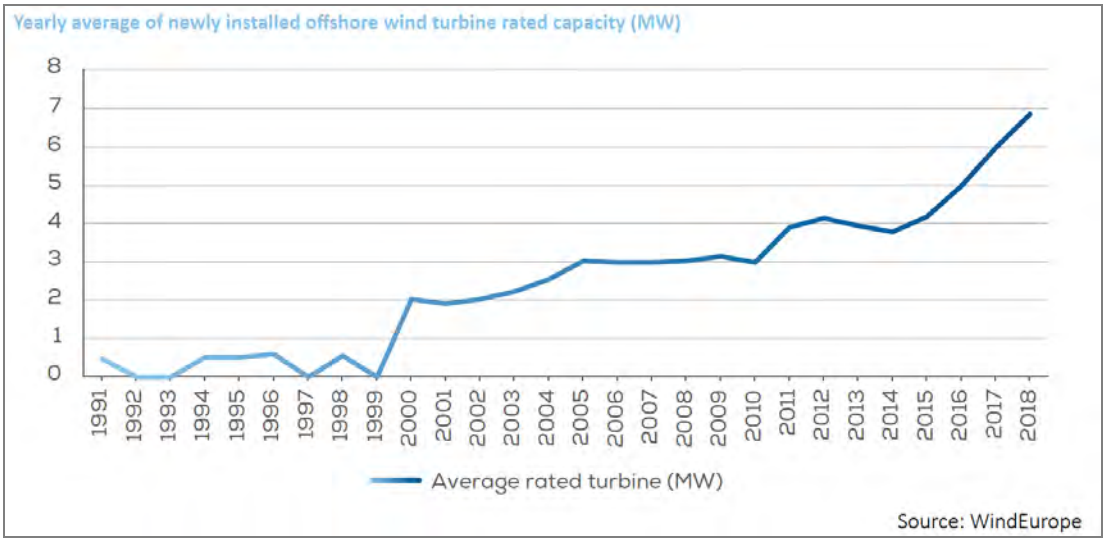
6.1. Research has been carried out in 2008, 2016 and 2019 into how European countries, USA and other countries are approaching offshore wind farms. The study has been limited to information that has been available in English or Dutch. As such, information on trends, implemented schemes and overall capacity has been easier to ascertain than how visual impact and seascape have been considered as part of the strategic environmental assessment or policy. The information provided can therefore not be considered comprehensive. Rather, the chapter provides a snapshot of current international practice.

6.2. A useful overview of current trends is provided by the European Wind Energy Association (EWEA) (2018) in its annual review[3]. It states that whilst new offshore installations were 16% down on 2017 (a record year), wind power increased more than any other form of energy generation. Offshore wind represented 23% of the gross annual installation in Europe, with 2.65GW of new capacity connected to the grid in 2018, and total offshore wind capacity of 18.5GW.

6.3. The Walney 3 Extension offshore wind farm was the largest operational offshore wind farm in the world in 2018, with 87 turbines and a capacity of 657 MW. In the UK,18% of annual electricity demand was from wind power with about half of this from offshore installations.

6.4. In 2018 the average rated capacity of newly installed offshore turbines in Europe was 6.8MW, 15% larger than in 2017.

Figure 6.1: Increase in the average capacity of installed offshore wind turbine.



Source: Wind Europe, 2018.

6.5. Globally, installed capacity by the end of 2022 is estimated[4] at over 46GW, mainly in China, the UK and Germany. The trend towards larger turbines is evident, as these decrease operational expenditure and have other advantages such as generally improved load factors from tall structures.

[3] Offshore Wind in Europe: Key trends and statistics 2018, Wind Europe

[4] Global Offshore Wind Market Report, Norwegian Energy Partners 2018

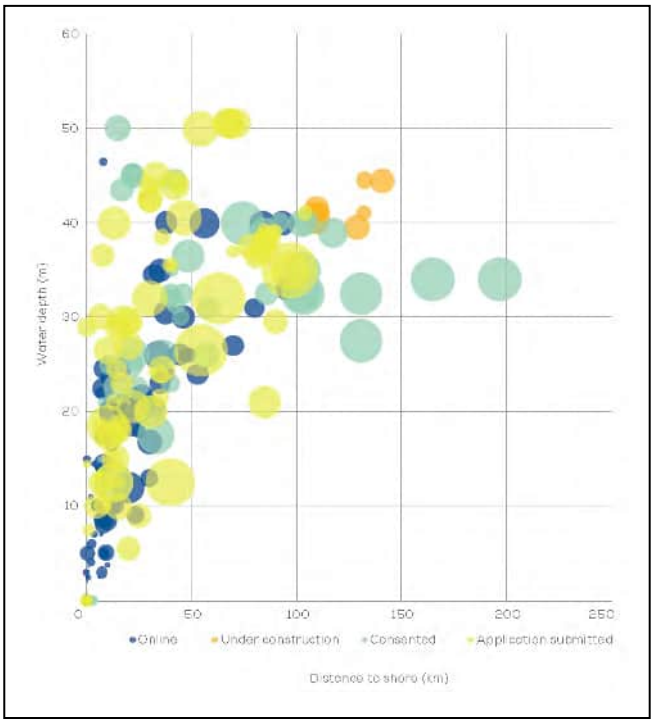
6.6. In 2018[5], for the first time, China installed more offshore capacity than any other country (1.6GW), followed by the United Kingdom (1.3GW) and Germany (0.9GW). New growth markets for offshore wind are emerging in the US, Chinese Taipei and Japan.

6.7. The richest offshore wind resource is located in deep waters, where attaching turbines to the seabed is not practical. Floating offshore foundations, offer the potential for less foundation material, simplified installation and decommissioning, and additional wind resource at water depths exceeding 60m.

6.8. There is variation in the distance that new offshore wind farms in Europe are located from the shore. German schemes consented but not yet operational are at an average of 52km offshore, whilst average of operational schemes is 55km. There is an increase in Belgium from operational at 36km to consented at 46km. However, a new wave of consented schemes in Sweden average 17km offshore, and in France proposed schemes with large turbines to 8.4MW are proposed at an average of 16km offshore. It is not clear whether the reason for this is that the space available to construct economically advantageous schemes is limited or due to the consenting regime.

6.9. The average distance offshore has very slightly reduced in recent years. At the end of 2017[6], the average distance of grid-connected wind farms offshore was 41km and the average water depth was 27.5m. The equivalent figures for 2015 were 43.3km and 27.1m respectively. This pattern of development is diagrammatically illustrated in **Figure 6.2.**

Figure 6.2 Average distance offshore and water depths of bottom-fixed turbines with grid connections



Note: capacity of wind farm indicated by size of bubble

Source: WindEurope, EWEA, 2017, Figure 25.

6.10. **Table 6.1** shows current offshore wind farms in Europe.

[5] From IEA.org website

[6] Offshore Wind in Europe: Key trends and statistics 2017, Wind Europe

Table 6.1 – Wind farms at construction or operational stages in Europe excluding the UK (current at August 2019)

Country	Name of Wind Farm	Turbine Size (MW)	No. Turbines	Distance from shore (km)
Denmark	Anholt	3.6	111	15
	Frederikshavn	2.3	4	3.2
	Horns Rev 1	2	80	18
	Horns Rev 2	2.3	91	32
	Horns Rev 3	8.3	49	30
	Tunø Knob	0.5	10	6
	Middelgrunden	2	20	2
	Nysted	2.3	72	10
	Samsø	2.3	10	3.5
	Sprogo	3	7	10.6
	Rodsand 2	2.3	90	9
	Rønland	2.3	8	0.1
	Avedøre Holm	3.6	3	0.5
	Nissum Bredning Vind	7	4	2
	Krieger's Flak	8.4	72	15
Germany	Aplha Ventus	5	12	43
	Amrumbank West	3.8	80	36
	BARD Offshore I	5	80	89
	Borkum Riffgrund 1	4	78	34
	Borkum Riffgrund 2	8.3	56	50
	Dan Tysk	3.6	80	70
	Global Tech I	5	80	115
	EnBW Baltic 1	2.3	21	16
	EnBW Baltic 2	3.6	80	90
	Nordsee Ost	6.15	48	57
	Meerwind Sud/Ost	3.6	80	23
	Sandbank 24	4	72	90
	Riffgat	3.6	30	15
	Butendiek	3.6	80	32
	Trianel Windpark Borkum 1	5	40	45
	Gode Wind 1 and 2	6.2	97	40
	Nordergründe	6.15	18	15
	Merkur	6	66	45
	Noordsee One	6.15	54	40
	Veja Mate	6	67	95
	Arkona	6.4	60	35
	Wikinger	5	70	35
	Deutsche Bucht	8.4	31	100
	Hohe See	7	71	95
	Trianel Windpark Borkum II	6.3	32	45
	Albatros	7	16	90
Belgium	Thornton Bank phase 1	5	6	27-30
	Thornton Bank phase 2	6.15	30	30
	Thornton Bank phase 3	6.15	18	30
	Northwind	3	72	37
	Belwind	3	55	46
	Rentel	7	42	33
	Nobelwind	3.3	50	45
	Norther	8.4	44	22
	Northwester 2	9.5	23	50

Country	Name of Wind Farm	Turbine Size (MW)	No. Turbines	Distance from shore (km)
Netherlands	Egmond aan Zee	3	36	10-18
	Prinses Amalia (Q7)	2	60	23
	Luchterduinen	3	43	23
	Gemini	4	150	57
	Irene Vorrink	0.6	28	<1
	Westermeerwind	3	48	<1
Sweden	Lillgrund	2.3	48	10
	Bockstigen	0.66	5	3
	Karehamn	3	16	7
	Vindpark Vänern	3	10	3
	SeaTwirl S1	0.3	1	<1
Rep. Ireland	Arklow Bank Phase 1	3.6	7	7
Spain	PLOCAN (Plataforma Oceanica de Canarias) - phase 1 demo	10	5	<3
	ELISA/ELICAN - Mario Luis Romero Torrent (PLOCAN site)	5	1	<1
	W2Power WIP10+ - 1:6 Scale prototype - PLOCAN	0.1	2	<1
France	Floatgen Project	2	1	19
Norway	UNITECH Zefyros demo	2.3	1	10
	Makani floating demo	4	2-4	6
	Karmoy fixed demo	6.2		<1
	Karmoy floating demo	4	2-4	9

Notes:

- Updates from 4COffshore and thewindpower.net, and other sources such as developers' websites.
- Only showing offshore schemes that are operational or under construction.
- Grey background = in construction

6.11. When all wind farms in **Table 6.1** are considered, the following data can be abstracted:

Table 6.2 – Turbine size, development size and distance offshore for operational European wind farms

Turbine Size	Average No. of Turbines	Average Distance Offshore km
0.5MW – 2MW	34	8.8
2.1MW – 3MW	37	14.1
3.1MW – 6.15MW	52	41.4
6.2MW - 10MW	33	41.5

6.12. **Table 6.1** shows that many developments are significant distances offshore, especially those in German waters, and this is confirmed in **Table 6.2**. Thus highlights the correlation between larger schemes with larger turbines and the distance offshore, with an average distance of just over 40km from the shore for turbines up to 10MW.

6.13. **Table 6.3** indicates that there are a large number of offshore wind farms at the stage of having received planning consent, or are under construction, especially in Germany.

France is also a new entrant to the offshore development with a number of consented schemes.

Table 6.3 -Wind farms with planning consent or pre-construction in Europe (August 2019)

Country	Name of Wind Farm	Turbine Size (MW)	No. Turbines	Distance from Shore km
Belgium	Seamade (Seastar)	8.4	30	40
	Seamade (Mermaid)	8.4	28	52
Denmark	All consented schemes are onshore / sea edge			
Germany	Sandbank 1	4	72	90
	GICON Schwimmendes pilot	2.3	1	19
	Arcadis Ost 1	12	58	20
	Baltic Eagle	9.5	52	30
	Deutsche Bucht Pilot Park	8.4	2	87
	Borkum Riffgrund West 1	6	45	53
	Gode Wind 3	15	8	35
	Borkum Riffgrund West 2	15	18	53
	Gennaker	8	103	15
	EnBW He Dreiht	10	90	85
	EnBW Hohe See	6	80	90
	Gode Wind 4	15	10	42
	Kaskasi	9	38	48
	OWP West	15	18	58
Rep. Ireland	Arklow Bank Phase 2	10	100	10
	Codling Wind Park	5	220	13
Sweden	Kattegat	6	47	9
	Kriegers Flak 2	20	80	32
	Stora Middelgrund	8	108	25
	Storegrundet	6	70	11
	Taggen	8	83	19
	Stenkalles grund	5	20	
Netherlands	Hollandse Kust Zuid Holland I and II - Chinook	10	76	26
	Windpark Fryslân	4.3	89	6
	Borssele I/II	8	94	22
	Borssele III/IV	9.5	77	32
	Borssele Site V -Leeghwater demo	9.5	2	36
France	Parc éolien en mer de Dieppe - Le Tréport	8	62	15
	Parc éolien en mer de Fécamp	7	83	15
	Eoliennes Offshore du Calvados	7	75	15
	Baie de Saint-Brieuc	8	62	18
	Saint-Nazaire	6	80	12
	Iles d'Yeu et de Noirmoutier	8	62	21
	Les éoliennes flottantes de Groix & Belle-Île	6	4	18
	Provence Grand Large	8.4	3	16

Notes:

Updates from 4COffshore and thewindpower.net, and other sources such as developers' websites.

Only showing offshore schemes that have been consented.

6.14. **Table 6.3** shows that many developments are still significant distances offshore, especially those in German waters, followed by Belgium and the Netherlands. However, new entrants France and Ireland and, to a lesser extent Sweden, are bringing down the average distances, as illustrated in **Table 6.4** with an average distance of just over 26km for 6.1-9.9MW turbines and 40km from the shore for 10-15MW turbines. As mentioned above, the reasons for this disparity are not clear.

Table 6.4 – Turbine size, development size and distance offshore for consented European wind farms

Turbine Size	Average No. of Turbines	Average Distance Offshore km
2MW – 6MW	66	32.1
6.1MW – 9.9MW	68	26.2
10MW- 15MW	51	40.1

APPROACHES- NATION BY NATION

6.15. In order to give a fuller picture, the research report text from the White Consultants 2016 study has been combined with an update for each country.

6.16. In Europe, the EU ratified the Protocol on Strategic Environmental Assessment on 21 November 2008. The SEA Directive (Directive 2001/42/EC) transposes the Protocol in the EU legislation. This applies to plans for energy such as offshore wind. SEAs have been researched where available in English.

Denmark

6.17. During the period 1999–2006 a comprehensive environmental monitoring programme was carried out in order to evaluate the environmental impact of two of the then biggest offshore wind farms in the world: the Horns Rev Offshore Wind Farm and the Nysted Offshore Wind Farm. The general conclusion from the environmental programme of Horns Rev and Nysted is that offshore wind power can be designed in an environmentally sustainable manner that does not lead to significant adverse impacts. The follow-up programme 2009- 2012 does not consider visual buffers further. The guidance document on environmental impact assessment (DEA, 2013) does not mention seascape or visual issues at all.

6.18. The EIA assessment of Horns Rev concluded that visual impacts would be minimal given the scale of the project and the fact that the wind farm was 15-20km offshore. At Nysted, where the wind farm can be found at a much closer distance to the coastline of Lolland-Folster, the EIA recognised that the turbine array is a 'significant element in the coastal landscape'.

6.19. A study by Soerensen et al (2002) which looked at lessons learnt from Middelgrunden Wind Farm stated that:

'It is concluded that although active public involvement is a time and resource requiring challenge, it is to be recommended as it may lead to mitigation of general protests, blocking or delaying projects, and increase future confidence, acceptance and support in relation to the coming offshore wind farms in Europe.'

6.20. Middelgrunden wind farm received very little opposition considering the visual impact of 102m high turbines just 2-3.5km away from a very popular recreational area near Copenhagen harbour. The reason is believed to be the strong public involvement, both

financially and in the planning phase, as well as refinement of the design of the scheme. This was modified from three lines of turbines to a smaller number of turbines in a single curving line on the approach to harbour.

6.21. Research into the Danish Energy Agency (DEA) and Danish Forest and Nature Agency (DFNA) on seascape and visual assessments reveals that though seascape and visual impacts are considered within the environmental process, there does not appear to be as much emphasis on a suggested buffer distance other than the limitations of the territorial boundaries.

6.22. The 'Future Offshore Wind Power Sites – 2025' (DEA, 2005) publication stated that 'It is estimated that depending on visibility conditions large scale offshore wind farms will be visible from a distance of 20km for 125m high turbines and 34km for 260m high turbines. Thus, turbine height greatly affects visibility. In calm conditions visibility across the sea is extremely good, but due to changing weather conditions visibility will be partially or substantially reduced most days of the year; there are only few days each year when visibility exceeds 19km'.

6.23. Since 2009, four new wind farms have been established: Sprogo, east of the island of Sjaelland (Copenhagen is on the east of this island), 10.5 km from the shore and comprising 7 3MW turbines, Anholt, with 111 3.6MW turbines 15km off the north west coast of Midtjylland, Rodsand 2, with 90 2.3MW turbines 9km offshore and Horns Rev 3 with 49 8.3MW turbines 25-40km offshore. In addition, 350MW of coastal wind farms and 50MW of test schemes will be connected in 2020.

6.24. A number of additional schemes are now in the early stages of planning and these are fairly close inshore on the north and west side of the mainland.

Germany

6.25. Guidance provided by the Bundesamt Für Seeschifffahrt und Hydrographie called 'Investigation of the Impacts of Offshore Wind Turbines on the Marine Environment' (StUK 3, 2007) suggests that a photorealistic simulation (text and visualisation) of the landscape affected by the wind farm in question must be presented, unless the project is located further than 50km from the nearest point on the coastline.

6.26. Future areas of wind farm developments in the North Sea and Baltic Sea are predominantly located in areas outside of the territorial limit. Nearly all German projects are planned for areas that are much more than 30km from the coast and in waters 20-25m in depth. This is a consequence of the heavy use of the German coastal waters for shipping, gravel extraction and military use. But in addition, most planners voluntarily keep to a minimum distance of 30km from the shore, as a result the wind farms become hardly visible from land or from the German Islands (German Energy Agency website).

6.27. Since 2009 there has been a significant increase in schemes in German waters. 5 new schemes with a total of 350 turbines, of 3.5 to 5MW capacity, are located between 15 and 45km off shore. In 2015 alone, wind turbines with a total capacity of 2282 megawatts went on grid. This brings Germany's total offshore contribution to 3.3 GW.

6.28. Germany now has 26 operational schemes, with 5 in construction, comprising large sites of up to 97 turbines at 7MW capacity, at an average distance of 55km offshore. Another 14 schemes are consented, and generally comprise a large number (average 42) of large turbines (5 to 20MW), on average lying 52km offshore. These proposed sites tend to be grouped close to other sites, and in many cases stacked in a linear arrangement (such as Gode Wind to Borkum lying east-west in the Helgolander Bucht) or in blocks further into the North Sea, and some schemes in the Baltic Sea.

6.29. The German market[7] regulation changed with the introduction of the WindSeeG (Offshore Wind Act) which became law on 1 January 2017. The WindSeeG introduces a centralised planning approach, which involves an Area Development Plan. This outlines the location and construction schedule of future transmission assets, currently out to 2025.

6.30. The majority of new areas coming forward are 115km or more offshore in the North Sea. In the Baltic, the areas defined are extensions of existing wind farms at the outer edge of the German exclusive economic zone (above 25 km from the coast). The draft environmental report of the draft Site Development Plan for the North Sea (BSH (1), 2019) indicates that there is a limit of a height of 125m wind turbines within sight of the coast and islands (2.15, page 148). It is considered that platforms and offshore wind farms at a distance of at least 30km from the coast would not cause much impact on the landscape as perceived from the land. The expected effect of the allocated areas is likely to be quite low (3.14, page 159). The equivalent report for the Baltic Sea (BSH (2), 2019) concurs with the North Sea findings with the expected extensions also to have a low visual effect with the installation is only being visible to a very limited extent from the land in good visibility conditions (4.10, page 217).

Figure 6.3 German Offshore wind farm development plan- North Sea

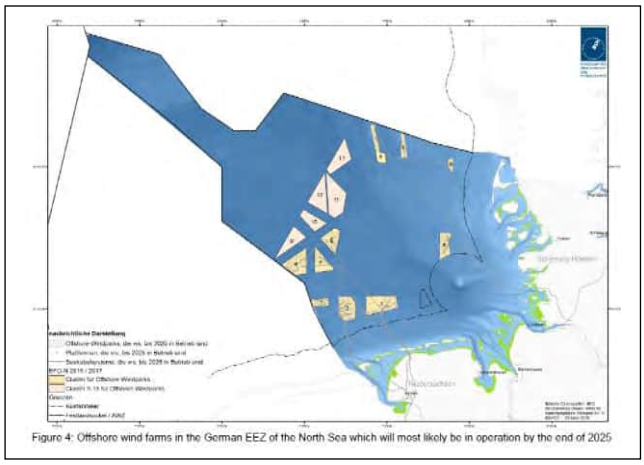


Figure 4: Offshore wind farms in the German EEZ of the North Sea which will most likely be in operation by the end of 2025

Source: Draft site development plan 2019 for the North and Baltic Sea (*English translation*), (German) Federal Maritime and Hydrographic Agency, Hamburg, October 2018.

Belgium

6.31. Belgium has only 67 kilometres of coastline. It has proved difficult to find information relating to strategic environmental assessment and visual effects but the pattern of development appears to take this factor into account.

6.32. The Electrabel development 12.5km off the coast at Knocke was granted a concession in March 2002. This was subsequently withdrawn by the Government due to local opposition. Following this, subsequent applications for other wind farms between 5km and 16.5km offshore were also rejected.

6.33. In June 2004 an offshore wind farm zone was defined by the Government running from just inside the 22km territorial waters out to sea. The approach was to site wind farms at distances considered too far for visual intrusion, stacking wind farms in line extending further and further offshore (see the eastern block in **Figure 6.4**).

6.34. The earliest wind farms applications were Thornton Bank, Bank zonder Naam (Eldepasco) 38km off shore and Bligh Bank (Belwind) 42km offshore. The Thornton Bank visual impact assessment stated that as the wind farm will be at 27km from the coast, the visibility of the wind turbines will be very limited and heavily dependent on the weather. The effect

[7] From Global Offshore Wind Market Report, Norwegian Energy Partners 2018

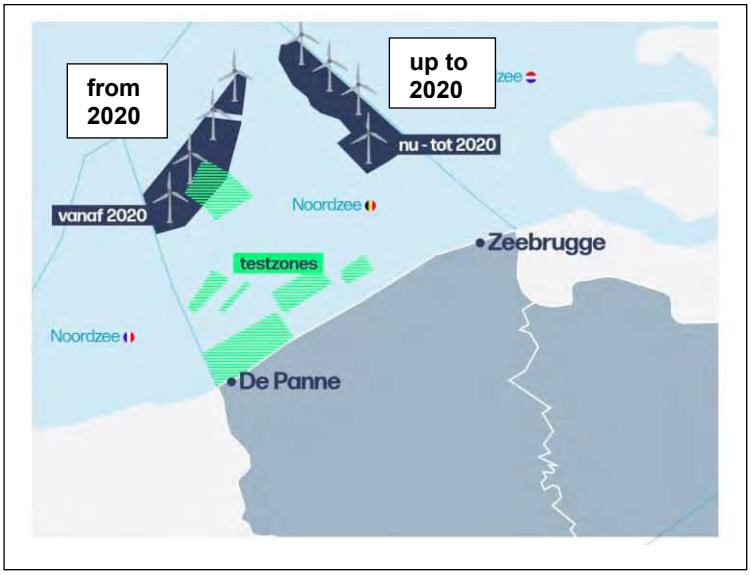
of the wind farm is judged to be slightly negative to non-existing. The inauguration of the 325MW project in the 2014 lifted Belgium's installed offshore capacity to 495MW. However, the closest wind farm is the 360MW Norther, between Thornton Bank and the coast, at 22km distance. This uses 8.4MW turbines. The rest are beyond Thornton Bank, including the 216MW Northwind, 165MW Belwind and 218MW Northwester (in construction) projects.

6.35. Currently there are 9 operational schemes, on average at 36km offshore, with turbines ranging from 3-9.5MW capacity. Two further consented schemes are located at 40 and 52 km offshore with between 28-30 turbines of 8.4MW capacity. All these are in a linear pattern stacked away from the coast.

6.36. Beyond 2020 a new wind farm zone of 1,750MW has been established to the south west running more parallel to the shore. This is around 35-55km offshore with a target completion date of 2025.

6.37. Experimental test zones for various energy uses such as wave energy are proposed further inshore.

Figure 6.4 Belgium offshore zones



Source: Regering zet in op groene Noordzeestroom: dubbel zoveel windmolens op zee, VRTNWS, 2018 *based on* Marien Ruimtelijk Plan 2020-2026 (MRP).

Netherlands

6.38. The Netherlands established a 'Near Shore Wind farm' demonstration project at Egmond aan Zee in 2007 to gain knowledge and experience to use further offshore. This temporary project is 8km from the shore in territorial waters.

6.39. The 'Offshore Wind Energy Act' in the Netherlands, 2015, simplified the decision-making process for the realisation of offshore wind projects, in an effort to achieve the Dutch renewable energy targets for 2020, a goal of 16% sustainable energy in 2023, and to expedite the permit and subsidy procedures. Under this legislation the government took responsibility in relation to the designation of zones, as indicated in the Dutch National Water Plan (Nationaal Waterplan).

6.40. A partial review was carried out of the National Water Plan in light of the designation of the Holland Coast area and the area north of the Wadden Islands for offshore wind energy (Netherlands Government, 2015). This indicated that wind turbines were to be located at least 22km from the shore off the Holland Coast. Generally speaking, the maximum distance at which wind turbines were theoretically visible was 35km, assuming a turbine tip height of 150m. Coastal weather conditions indicated that a turbine located 22km

from the shore would be visible on 19 % of days. During the summer, such a turbine would be visible on roughly 31% of days. For the Holland Coast area, the impact of an array 22km from the coast was assessed as negative in terms of visibility and the impact graded as negative in terms of dominance. However, the designated area north of the Wadden Islands roughly 60 km from the shore was not considered to be visible from the islands. Hence, the impact was assessed as neutral in terms of both visibility and dominance. All developments within the zones are required to go through regulatory processes so not all may be developed.

6.41. Subsequently, the Offshore Wind Energy Roadmap 2030, issued in 2018, calls for an additional 7GW of capacity. The location of these development zones, such as Hollandse Kust (west) and Ijmuiden Ver, are around planned 60km from the shore at their closest points, beyond the existing and other wind farms to be implemented beforehand (see figure below).

6.42. Currently, there are 6 operational schemes at distances of 22-50 km offshore, with an average of 38 turbines ranging from 3 to 9.5 MW capacity. There are three further schemes consented including a smaller schemes 6km from the shore with 4.3 MW turbines, and two at 26 and 36 km using 9.5 or 10MW turbines.

Figure 6.5: Offshore wind energy strategy for Netherlands

Source: Offshore Wind Energy Roadmap 2030, Dutch Ministry for the Economy and Climate, 2018.

Ireland

6.43. Overall there has been limited activity in the offshore sector, with only one operational scheme of seven 3.6 MW turbines at Arklow Bank, 7 km off the east coast south of Dublin.

6.44. In 2014, the Irish government published its Offshore Renewable Energy Development Plan setting targets for offshore wind development for 2030. Following the plan, Ireland would install a minimum of 800MW of capacity, with medium and high scenarios of 2.3GW and 4.5GW also envisioned by 2030.

6.45. The Energy White Paper entitled 'Ireland's Transition to a Low Carbon Energy Future 2015-2030', 2015, identified that 24% of Ireland's entire electricity usage was met by indigenous wind energy. However, offshore wind installation was considered significantly more expensive than onshore, and so the latter was intended to be used to meet short term targets.

6.46. The Climate Action Plan 2019 now indicates that previous targets will not meet the 2030 emissions reduction targets. As such, a major step up in ambition is required to produce 70% of electricity from renewable sources by 2030 which includes increasing offshore wind energy capacity to 3.5GW. A 'top team' is intended to be set up to drive this forward (page 59).

6.47. The Ireland Offshore Renewable Energy Development Plan SEA, 2010, relied on the DTI, 2005 report in terms of the likely visual buffers i.e. a 35km seaward limit. The visual significance of a wind device beyond this distance was assumed to be negligible in most cases as the changes to the seascape will be very minor or imperceptible to the human eye (page 76). Visibility may extend over longer distances in seascapes associated with high cliffs or steep hinterland. A study for Northern Ireland is referred to in terms of defining the magnitude of effects of 5-7MW turbines (page 77). These findings were verified as part of the Irish SEA study and were:

- Large: 0-15km from the coast-notable change
- Medium: 15-24km – moderate change
- Small: 24–35km – minor change
- Negligible: 35km – no discernible change

6.48. The report goes on to state that it is not possible to determine effects at a strategic level due to the variation in receptors (page 78). Designated coastal landscapes are discussed and are considered to be sensitive (e.g. page 209).

6.49. Several further wind farm schemes have now been consented including a major extension of Arklow Bank with a scheme of 100 10MW turbines, and Codling scheme of 220 5MW turbines. These two new schemes are just 10 and 13km offshore respectively.

Poland

6.50. Whilst Poland has identified a number of large potential sites for offshore wind development in the Baltic, none are yet consented. The three sites which appear to be the likely first schemes, are Baltica 1 at 85km offshore, and Baltica 2 and 3, lying at approximately 30km offshore. These three alone may create 3 GW of capacity. Other license applications are evident which would further extend this cluster significantly.

Estonia

6.51. Estonia has a target within its National Renewable Energy Action Plan to install up to 500MW of offshore wind capacity by 2018, although this has not been met.

Finland

6.52. There are three demonstration offshore wind farms operating in Finland, with a total capacity of 32MW. In 2017, the 42MW Tahkoluoto demonstration scheme was commissioned 1.2km offshore. The wind farm uses technology designed specifically for icy weather conditions.

Norway

6.53. To date, Norway has 2MW of offshore wind capacity installed at the Hywind floating demonstrator project. The Norwegian Ministry of Petroleum and Energy has been pursuing the potential for offshore wind. An SEA of 15 offshore wind zones has been published and

this has been consulted on. This is in Norwegian so the contents are not known. These vary from around a few km from shore for demonstration projects to over 100km offshore. In 2019 Utsira Nord, Sandskallen – Sørøya Nord and Sørlige Nordsjø II were further consulted on. Also in 2019, Government subsidies have been agreed (by Enova for Equinor) for the construction of 11 8MW floating wind turbines to supply power to North Sea oil platforms. This builds on Equinor's experimental Hywind scheme.

United States of America (USA)

6.54. In the USA, environmental impacts must be assessed in order to meet the National Environmental Protection Act (1970) and the National Historic Preservation Act (1966). The Bureau of Ocean Energy Management (BOEM) manage the process of assessing, selecting and leasing federal areas offshore on the USA outer continental shelf to 200 miles. An environmental assessment is carried out as part of the selection process and stakeholders views are taken before areas are allocated. The National Park Service are consulted to identify potentially sensitive visual settings and concerns which can influence the identification of potential projects areas (National Park Service, 2014, 2.3, page 10).

6.55. The National Park Service have guidelines to evaluate visual impacts of proposals coming forward within the lease areas (National Park Service, 2014). This guidance sets out eight factors influencing visibility which include lighting, atmospheric conditions, distance and the characteristics of the object e.g. motion and backcloth (page 42). The guidance refers to Sullivan et al, 2013, whose research suggests that an appropriate area of impact analysis based on turbine heights up to 500 feet (152m) would be 25 miles (40km). Taller turbines might be visible for longer distances and could require a larger area of analysis (page 55).

6.56. The first offshore wind farm in the USA was completed in December 2016 and is located 5km south east of Block Island, Rhode Island. This has five turbines totalling 30MW of capacity. As of June 2018, BOEM has issued 13 commercial wind energy leases off the coasts of Delaware, Maryland, Massachusetts, New Jersey, New York, North Carolina, Rhode Island, and Virginia, totalling over 1.3 million acres (BOEM, 2018).

Canada

6.57. Currently, Canada has no installed offshore wind capacity. In 2016 the government of Ontario, where the majority of Canadian projects are planned to be located, announced it is to keep a moratorium on offshore wind projects until potential environmental impacts are fully understood.

Australia

6.58. Before 2015, the Government did not support development of an offshore wind industry. The current Australian Government is more favourable towards an offshore wind industry and in 2015, Australia's Clean Energy Innovation Fund was established to provide AUD $1 billion to support offshore technologies (including offshore wind) from demonstration to commercial-scale deployment.

Asia

6.59. In Asia[8], governments are committing to decarbonise their energy systems but some are at an early stage of market growth in terms of offshore energy.

[8] From Global Offshore Wind Market Report, Norwegian Energy Partners 2018

6.60. The region is faced with difficult weather conditions typhoons and sea bed earthquakes in parts of China and Taiwan), river delta sea bed sediments (China), and deep water (Japan and South Korea).

6.61. In China, there are many projects under construction or pre-construction which are up to and around around 20km offshore. Deepwater development zones such as Guandong are around 55km + offshore.

6.62. Chinese Taipei completed an auction for 5.5 GW of offshore wind capacity, and utilities have already signed power purchase agreements for 1GW. Most of the earlier development zones/pre-construction sites e.g. Formosa1 are near shore with some extending further offshore, beyond/behind other developments e.g. Greater Changhua 1.

6.63. Vietnam has almost 100MW of capacity installed in the Bac Lieu offshore wind farm, installed in phases between 2013 and 2015. This is near shore- within 1km. A further 100MW is currently under construction at the first phase of the Khai Long project, with the potential for an additional 200MW to be development at the site. Again, this is very close to the shore. Longer term projects such as Than Long are 14km + offshore.

6.64. In Japan, the parliament has approved a new law to define project development zones. This new law is expected to facilitate deployment of large-scale projects.

India

6.65. In 2015, the Indian Ministry of New and Renewable Energy (MNRE) announced a National Offshore Wind Energy Policy, allowing areas within India's EEZ for offshore wind farm development. These are focussed in two near shore development zones off Gujarat.

Summary

6.66. Overall, European nations tend to start with developments closer to shore and then place larger arrays with larger turbines significantly further offshore, sometimes stacking beyond nearer existing arrays. In the USA, the earliest wind farm at Cape Wind has been subject to prolonged objection, partly on visual setting grounds. Elsewhere, there is no clear indication of how the visual impacts influence decision making- in Asia there are many near shore wind farms but the quality of coastal landscape or designations nearby are not known.

6.67. Denmark has identified a number of offshore 'wind park' locations to meet offshore renewable energy targets. The DEA and DFNA have both recognised the importance of visual assessments in the planning process as recognised in published documents; however, evidence suggests from previous EIA work in Denmark that public interaction at an early stage is more beneficial than setting offshore limits.

6.68. In Germany, planners and developers have favoured a 30km minimum distance offshore to deter any refusals based on the visual and noise impacts. Not only does this assist in planning consent, but it also prevents any conflicts with other nautical activities around the coastline. The trend in the Netherlands and Belgium appears to be to allocate areas at least 22km from the coast, with larger zones significantly further offshore (35-60km).

6.69. There has been a substantial increase in the numbers of turbines constructed in the EU in the last 6 years. Leaving aside the contribution of the UK, Germany has seen the most significant growth in this sector, with many new schemes and many other projects in the pipeline, which may reach a combined 4GW by 2017. Belgium also has expanded its capacity considerably, with a view to providing 2.5GW capacity by 2022. The Netherlands has been slower but has ambitious plans to 2030. Denmark, which was the early pioneer of offshore wind, is less ambitious but may see its current capacity double by 2020, to around 2.3GW. Ireland's offshore industry has developed slowly but the Climate Action Plan 2019 indicates an acceleration of deployment to meet the 2030 targets.

6.70. The trend in the most recent and larger planned schemes, is for larger turbines, in significant numbers, and further offshore for the more experienced nations. However, the average distances offshore are reducing due to late entrants Ireland, France and Sweden who are starting their offshore development closer to shore. Wind farms tend to be stacked behind each other where there is limited coastal extent with some gaps between development zones. Arrays further offshore are arranged more parallel to the coast as visual intrusion is considered less problematic.

7. Analysis of offshore wind farm seascape and visual impact assessments

7.1. This chapter considers all available offshore wind farm SVIAs including those for Round 1 to 3 zones, project extensions, demonstration projects and STW wind farm developments. **Figures 3.1 and 3.2** shows the location of the zones and proposals respectively.

7.2. The main objective for analysing the Seascape, Landscape and Visual Impact Assessments (SVIAs) of individual offshore wind farms is to establish a pattern of the limits of visual significance. The relevant guidance has been discussed in Chapter 5 and it has been established that DTI (2005) guidance remains relevant and so the approach taken in the White Consultants 2009 and 2016 studies also remains relevant. This chapter therefore combines the analysis of 'smaller' wind turbine sizes from the 2009 and 2016 reports with additional analysis of the most recent wind farms SVIAs with larger turbine sizes.

7.3. The DTI guidance (2005) states that '*A viewpoint assessment should be carried out to identify and evaluate the potential effects on available views and visual amenity arising from the proposed offshore wind farm at specific representative locations in the study area*'. The conclusions on the degree of effect on these viewpoints will also inform the expected effect on seascape units. In order to meet the EIA requirements, the choice of viewpoints must go through consultation with the local authority and key stakeholders whilst also taking into consideration comments made during public consultation.

7.4. Predicting the likely significance of visual impacts (i.e. comparing the development against the original baseline) for each viewpoint is achieved by combining the *sensitivity* of the receptor or seascape unit that the viewpoint is located within and the *magnitude* of change. For the purposes of the brief, the magnitude of change is the key determinant as the sensitivity of receptors will vary across Round 4 areas.

Sensitivity

7.5. The sensitivity criteria used for each seascape character area are currently derived (with minor modification) from the University of Newcastle Study (2002) as set out in **Chapter 5** although GLVIA3 indicates that value is also an important component.

7.6. The sensitivity of a visual receptor combines the judgement of the susceptibility of the receptor (or person) to the specific type of change or development proposed and the value related to the view such as through planning designations or attached to the view by the receptor. These judgements will be dependent on the location and context of a viewpoint, the expectations, occupation and activity of receptors and the importance of the view.

Magnitude of Change

7.7. The magnitude of change to receptors is broadly assessed in a standardised way based on DTI (2005) and other guidance such as GLVIA3 and involve consideration of the *scale or size of effect* with the *extent* of the area affected and *duration/reversibility* of that effect. Factors that influence the scale of effect include the size and character of development, the distance of development from a viewpoint, the degree of change in a view, the degree of contrast or integration and the angle of view of a receptor.

7.8. Inevitably there is some variation in how the magnitude of change is defined in the SVIAs reviewed. The majority tend to follow the definitions as suggested by the GLVIA (2002 and 2013) and SNH (2005) as set out in **Table 5.2**. Assessments may use other terms for magnitude. Our interpretation of these definitions is set out below in **Table 7.1**.

Table 7.1 - Terms for Magnitude

Magnitude/size class	Other terms used for magnitude
Very Large	Very high or very substantial, high or substantial. (Assessments may not differentiate between very large and large)
Large	High or substantial, medium- high or moderate – substantial. (Assessments may not differentiate between very large and large)
Moderate	Medium
Small	Low, slight, minor, (also including medium-low).
Very Small	Low (slight or minor)-negligible

7.9. For wind farms which are some distance offshore some assessments of magnitude consider the worst-case effect assuming weather conditions of very good or excellent visibility which allow clear views of the development. Other assessments factor in that very good or excellent visibility occur on only a small proportion of days in the year with resulting reduction in visibility of the development and the corresponding assessed magnitude of effect. It is considered that these approaches are averaged out in the overall findings.

7.10. The assessed wind farms include those which are considered alone and also against a baseline including other offshore wind farms. Here, there is effectively an assessment of additional effect. This now reflects the situation in many parts of English waters. Additional effects are highly likely to be of lower magnitude than if the wind farm was viewed in isolation because of the perception of less change from the baseline view/situation. This factor tends to reduce the distance at which potentially significant effects apparently occur and so these buffers may be conservative for areas where there is no existing development, such as the south west. Some wind farms are extensions to existing wind farms and so here the influence of existing development is particularly marked. Because of this we also comment on the average thresholds of effect excluding analysis of the three main extensions (at Walney 3, Burbo Bank and Thanet).

Significance

7.11. Significance is derived from combining the sensitivity of a receptor and the magnitude of change. **Table 5.3** sets out how this is suggested in seascape guidance (DTI (2005)). For individual viewpoints in certain SVIAs the assessor may have decided that Table 5.3 does not apply and the effect may be considered significant or not significant depending on particular conditions.

7.12. For the purposes of this study it is considered sufficient to look at the magnitude of effect only for each viewpoint so that the sensitivity of individual receptors does not confuse the findings. The range considered for the purposes of the brief is low (including moderate/low) and moderate magnitudes of effect which combined with high and medium sensitivity of receptors respectively result in effects of moderate significance. Combined with a high sensitivity receptor, a medium magnitude of effect is likely to result in an effect of 'major-moderate' significance. A major-moderate is classified as significant in the vast majority of SVIAs and so this effect should be avoided if possible. Therefore off sensitive coasts this should not be used as the buffer distance as it builds in likely significant effects, particularly if an average of SVIA findings is used. Receptors of low sensitivity exist on the coast, mainly in industrial or urbanised areas. However, the extent of these areas tends to be limited and adjacent receptors in rural areas adjacent are likely to be of at least moderate/medium sensitivity. It is highly unlikely that there

will be any locations where large offshore wind farms will only be subject to views from low sensitivity receptors. Therefore to avoid any significant effects, moderate adverse magnitude of effects is used as the closest range of distances advisable off coasts without high sensitivity receptors. Both the average and maximum distance for low and medium magnitude of effect are recorded. Cumulative effects have also been noted and used where a wind farm is an extension to an existing large array.

Structure of analysis

7.13. The offshore wind farms used in the 2009 and 2016 SVIA analyses are listed first. The additional wind farms and their SVIAs considered in this study are then described. All relevant SVIA findings are summarised and set out in **Tables 7.2 and 7.3**. The findings of the analyses are then discussed. The individual SVIA analyses are shown in **Appendix D**.

7.14. An average 'average distance' and an average 'maximum distance' of moderate or low adverse effects have been extracted from the relevant viewpoints in each assessment. Analysis of the results have been separated for different sizes of turbines rather than in MW capacity used in previous OESEA reports. It is considered that it is now most helpful to concentrate on ranges of turbine heights, as this is a determining factor of magnitude of effect. This approach was also used in the NRW, 2019 report, so consistency of approach is beneficial. However, as the size of array, i.e. the number of turbines, is generally increasing, a further analysis of the same wind farms in size (number of turbines) order has been carried out. This is discussed after the main analysis with information in **Appendix G.**

Reliability of SVIA evidence

7.15. The SVIAs had been carried out by a range of consultancies and individuals with a range of experience in judging effects of wind turbines offshore, and also over a range of time-over ten years. Experience in this field is growing but no third-party reviews of the SVIAs have been made available or studied. The study team have not verified the accuracy of judgments by on-site visits. Therefore the results derived from this exercise have to be considered with some caution.

SVIAS REVIEWED IN 2009

7.16. Ten SVIAs were reviewed in 2009 to establish if there was consistent and usable data on visual impacts from viewpoints at various distances. Nine were taken forward. Lincs wind farm was identified as an anomaly to the rest of the SVIAs for Round 2 wind farms with a much lower set of distances for the magnitudes of change. This was because two Round 1 wind farms lying between Lincs and the coast had been included within the baseline assessment and so the degree of change was considered as much less by the assessor. Therefore, this assessment was excluded to avoid distortion of the results.

7.17. The SVIAs contributing to the overall analysis were:

Round 1 SVIAs

- Kentish Flats
- North Hoyle

Round 2 SVIAs

- Gunfleet Sands 2
- London Array
- Thanet
- Walney

- West of Duddon Sands
- Gwynt y Môr
- Beatrice Demonstration Project

SVIAS REVIEWED IN 2016

7.18. Fourteen SVIAs of schemes coming forward between 2009 and 2016 were reviewed. Data from nine schemes were taken forward to analysis. Four schemes offered incomplete data, and one, Gunfleet Sands, was not included as it consisted of only a two turbine extension and would have distorted the data significantly.

7.19. The SVIAs contributing to the overall analysis were:

- Westermost Rough A
- Hywind Scotland Pilot Park
- Docking Shoal
- Navitus Bay
- Burbo Bank Extension
- Beatrice Offshore
- Rampion
- Neart na Gaoithe
- Walney Extension

Key issues arising from 2009 and 2016 studies

7.20. There was a distinct difference between the findings of the 2009 study and the 2016 study in respect of the SVIA thresholds of visual impact. The later study indicated higher threshold distances. The average size of wind farm in 2009 was 85 turbines and in the 2016 analysis, 122 turbines. However, this is slightly misleading with the first group including the very large Gwynt y Môr scheme and a number of smaller schemes at 20-40 turbines. The developments between 2009 and 2016 were consistently larger between 110-207 turbines. This may explain the difference in the thresholds of effect as the spread of turbines is one of the key determinants.

SVIAS REVIEWED IN 2019

7.21. Thirteen SVIAs of schemes coming forward between 2016 and 2019 were reviewed. Data from nine schemes were taken forward to analysis. Four schemes were too far offshore to provide data for effects on coastal receptors.

East Anglia ONE North

7.22. This proposed scheme is located approximately 36km from its nearest point onshore, close to Lowestoft. It comprises up to 67 turbines, of up to 19 MW power capacity, with tip height up to 300m, with a total capacity of 800MW. Further refinement of the project design and the EIA will be based on consultation responses.

7.23. 9 viewpoints were considered to have potential for significant effects, ranging from 38.8 to 42.7 km distance. A further 8 viewpoints were considered to have no potential for significant effect.

7.24. There may be cumulative seascape, landscape and visual impacts taking into account the East Anglia ONE, East Anglia THREE, Norfolk Vanguard and Norfolk Boreas offshore wind farms.

7.25. The sources of information are the Preliminary Environmental Information Scoping Report, Volume 1 2015, and Chapter 28 Offshore Seascape, Landscape and Visual Amenity.

East Anglia TWO

7.26. The scheme lies 31km from the Lowestoft. The Suffolk Coast and Heaths AONB and The Suffolk Heritage Coast is located approximately 29.7km from the wind farm site.

7.27. Up to 75 turbines with 900 MW capacity are proposed, with an individual turbine capacity of up to 19 MW and a tip height up to 300m. The realistic worst case layout assessed as the project design envelope for the SLVIA is a 60 x 300m wind turbine layout.

7.28. There may be cumulative seascape, landscape and visual impacts taking into account the East Anglia ONE, East Anglia THREE, Norfolk Vanguard and Norfolk Boreas offshore wind farms.

7.29. 20 viewpoints were identified for detailed assessment ranging from 30.5 to 47.7km distance.

7.30. The sources of information are the Scoping Report by Scottish Renewables, November 2017, Appendix 4.1 and 28.7 Offshore Wind farm Visibility, the Planning Inspectorate and 4COffshore.

Norfolk Vanguard

7.31. The scheme covers two areas which are, at their closest, 47km from the shore. Up to 180 turbines with a total capacity of 1800 MW are proposed, with a tip height up to 350m.

7.32. Due to the distance offshore, the ES states that 'potential impacts during the operational and maintenance phase would largely be limited to the presence of the above ground onshore infrastructure and its influence on landscape and visual receptors', i.e. no impact is assessed for the offshore turbines. The scheme is therefore excluded from analysis.

7.33. The sources of information are ES Chapter 5 Project Description and Chapter 29 Landscape and Visual Impact Assessment, June 2018.

Norfolk Boreas

7.34. The scheme lies 72 km offshore. Between 90-200 turbines with a total capacity of 1800MW are proposed, using 9-20MW turbines.

7.35. Due to the distance offshore the ES states, as with Vanguard, that the potential impacts during the operational and maintenance phase would largely be limited to the presence of the above ground onshore infrastructure and its influence on landscape and visual receptors. Therefore no impact is assessed for the offshore turbines. The scheme is therefore also excluded from analysis.

7.36. The sources of information are ES Chapter 5 Project Description and Chapter 29 Landscape and Visual Impact Assessment, June 2019.

Thanet Extension

7.37. The scheme is located 8 km from the coast. The proposals are for up to 34 turbines, with a total capacity of 340 MW, with turbines of 8-12 MW capacity and tip heights up to 250m.

7.38. A 45km radius study area was selected. 29 viewpoints were assessed as visual receptors, at distances ranging from 8.7km to 34.7 km.

7.39. The sources of information are Environmental Statement Volume 2 Chapter 1: Project Description (Offshore) June 2018; and Environmental Statement Volume 2 Chapter 12: Seascape, Landscape and Visual Impact Assessment.

Wave Hub

7.40. In 2006 a scheme was consented for wave energy converters (WECs) situated 16km out to sea off St Ives Head, a 1km x 3km deployment area. It planned a maximum capacity of 20MW.

7.41. In 2018 a subsequent application was made for the proposed deployment of either up to four floating wind turbines with blade tip to a maximum of 220m, in place of the WECs, or a combination of the two technologies which may include up to three hybrid wind and wave platforms, totalling a maximum generating capacity of 40 MW.

7.42. Four onshore viewpoints were assessed for visual impact ranging from 17.5 to 20.5 km. The scheme is not taken forward for analysis as 3-4 wind turbines are not representative of larger offshore wind farm developments which are the focus of this report. Though two other demonstration projects are included in the analysis it is considered that a third smaller scheme (Wave Hub) would begin to potentially distort the findings.

7.43. The sources of information are South West of England Regional Development Agency Wave Hub Environmental Statement June 2006 (see p 202 Landscape and Views); Wave Hub Floating Wind Consent Application ES 2018; and the Seascape, Landscape and Visual Impact Assessment Chapter 8, August 2018, and Addendum January 2019.

Neart na Gaoithe

7.44. This scheme is located 15.5 km offshore from the Fife Ness. It was consented in November 2017, and comprises of up to 54 turbines with a total power capacity of 450MW, with turbines up to 208m high.

7.45. The Seascape and Landscape Visual Impact Assessment found that there was a 'significant' effect on the character of East Fife and north-east Lothian. 21 viewpoints were assessed for visual impact, at distances ranging from 15.5 to 49 km. Cumulative impacts will be experienced in the context of The Inch Cape wind farm and proposed wind farms at Seagreen.

7.46. The sources of information are Neart na Gaoithe Offshore Wind farm (Revised Design) – EIA Non-Technical Summary March 2018; see Chapter 14 of the EIA Report.

Inch Cape

7.47. The scheme is located 15km off the coast of East Lothian near Arbroath. It was consented in 2014, but subject to legal challenge. The scheme now has a reduced number of turbines (by more than a third), to a maximum of between 40-72 turbines up to a height of 291m. The total power capacity is 784 MW.

7.48. Significant effects are predicted for recreational users of coastal facilities at distances of up to approximately 20 km distance from the wind farm and potentially up to 35 km distance for high sensitivity receptors. 26 viewpoints were selected ranging from 18.5 to 52km distance.

7.49. The sources of information are Inch Cape Wind Farm Environmental Impact Assessment Report 2018, Non-Technical Summary, and Volume 12B (Viewpoints chapter 12C).

Seagreen

7.50. This scheme lies at its closest 27km from the shore on the Angus coastline. It was consented in 2014, but has since been updated with improved designs. The new 'optimised' project is in two parts, Alpha and Bravo, each with up to 75 turbines or a combined maximum of 120, with blade tip height up to 280m, with a total capacity of 1500MW.

7.51. Eight viewpoints used within the SLVIA for the originally consented project are utilised in the revised SLVIA, plus a further six, at distances of between 30-73km.

7.52. The SLVIA states that the optimised Seagreen wind turbines will also be seen in the same context as consented projects at Inch Cape and Neart na Gaoithe. This will bring about a range of potential cumulative effects. However, as the viewpoint assessment has also concluded, the potential contribution that the optimised Seagreen Project will make to the cumulative effects is not considered to be the significant factor.

7.53. The sources of information are Seagreen Wind Farm Environmental Impact Assessment Report 2018, Non-Technical Summary, and Chapter 13 Seascape, Landscape and Visual Amenity.

Moray East

7.54. This proposal supersedes the consented Telford, Stevenson and MacColl wind farms. At its closest it is 22km from the coast in the Outer Moray Firth. The consented scheme comprises 137 turbines of 8.1-15 MW with maximum tip heights to 280m, and the overall generation capacity of 1,116 MW. Construction of the wind farm using turbines with a blade tip height of 204m has started.

7.55. The original application included the assessment of 7 viewpoints between 22-34 km distance. The threshold at which significant impacts diminish was considered to be in the region of 30–35 km. The revised application included 22 viewpoints between 23-49km.

7.56. Sources of information are Moray East Offshore Wind farm Alternative Design Parameters Scoping Report March 2017 and Chapter 9 Seascape, landscape and visual assessment.

Moray West

7.57. This proposed scheme lies 22.5 km from the shore in the Outer Moray Firth lying adjacent to Moray East. It comprises 62-85 turbines with blade tip heights from 199 to 285m. Capacities are not stated in the EIA. The SLVIA assessment is based on the largest turbines.

7.58. 26 viewpoints were assessed, at distances of between 23 and 53km, and 10 are considered to have potentially significant effects.

7.59. The Development was also considered cumulatively with the Moray East Offshore Wind Farm and 25 onshore wind farms (consented or in-application).

7.60. Sources of information are The Moray West Offshore EIA report, Volume 1 Non-Technical Summary and Chapter 14: Seascape, Landscape and Visual Impact Assessment (SVIA p49).

Kincardine Offshore

7.61. The proposed scheme is located south-east of Aberdeen approximately 15km from the Scottish coastline. It is considered a commercial demonstrator site, which will utilise floating foundation technology, and will be one of the world's first arrays of floating wind turbines alongside Hywind. It comprises eight 6MW turbines, with a later variation to six 8.4 MW (tip height 191m) and one 2MW turbines (tip height 106m).

7.62. 23 viewpoints were assessed in the 2016 ES, at 15–36 km distance.

7.63. Sources of information are The Kincardine Offshore Wind farm Project Design Statement 2018, and Section 36C Variation ES 2017 (revised viewpoint analysis), and original 2016 ES (see p488, 501).

Hornsea Four

7.64. This scheme lies 65 km from the shore at East Riding of Yorkshire. It comprises of up to 180 turbines up to 370m high with a total capacity of 1000 MW.

7.65. The EIA scoping report (October 2018) states that Hornsea Four will have similarities to the existing Hornsea projects both in terms of the nature of the project and its location. As a result, the ES will take into account the results of EIAs for the existing Hornsea projects in order to avoid duplication of assessment. The scoping report states that given their proposed distances from the nearest shore it is likely that these effects can be scoped out on the basis that they are likely to be close to or below the horizon at the distances from shore which are proposed.

7.66. The scheme includes up to three HVAC booster stations lying closer to the shore, at a minimum distance of 25km. The Preliminary Environmental Information Report (PEIR) July 2019 indicates that despite these booster stations the scheme will have no significant effects on seascape and visual resources.

7.67. This scheme is not carried forward to analysis due to its distance offshore.

OVERALL COMBINED ANALYSIS

7.68. A summary of the visual impact analysis for all the 28 schemes are shown in **Tables 7.2 and 7.3** and illustrated in **Figures 7.1 and 7.2.**

Table 7.2 Summary analysis of SVIA visual effects of offshore wind farms based on turbine height

Wind farm	Round	Status	Turbine capacity in MW*	Maximum turbine height to blade tip (m)**	Max no. of turbines**	Maximum wind farm capacity (MW)**	Nearest coast km	Existing wind farms in baseline?	No. of SVIA viewpoints	Low magnitude of effect***		Medium magnitude of effect	
										Average Distance km	Maximum Distance km	Average Distance km	Maximum Distance km
North Hoyle	1	Implemented	2	107	30	60	7.5	n	12	18.3	21.8	11.2	13.5
Gunfleet Sands 2	1	Implemented	3.6	128	22	173	8.5	y	8	12.1	19.6		
Kentish Flats	1	Implemented	3	140 (115)	30	90	8	n	13	21.1	26.9	11.2	12.1
Gwynt y Môr	2	Implemented	3.6	140	160	576	18	y	36	22.3	35.8	14.3	15.3
Docking Shoal	2	Withdrawn	3-6	145	177	540	14	y	8	22.3	26.3	19.1	19.1
									Averages	**19.2**	**26.1**	**14.0**	**15.0**
Thanet Sands	2	Implemented	3	150 (115)	100	300	11	n	10	21.8	27.7	17.5	17.5
West of Duddon Sands	2	Implemented	3.6	150	139	389	14	y	17	23.3	26.3	11.0	14.6
Greater Gabbard	2	Implemented	3.6	170 (131)	141	504	23	n	6				
Sheringham Shoal	2	Implemented	3.6	172 (135)	88	317	17	n	26	23.5	25.0	19.2	21.0
Westermost Rough A	2	Implemented	6	172 (177)	110	210	8	n	9	18.9	32.6	15.3	17.5
London Array	2	Implemented	3.6	175 (147)	271	630	21	y	18	21.0	21.0		
									Averages	**21.7**	**26.5**	**15.8**	**17.7**
Kincardine	SFD	Construction	7 (8.4)	176	7	50	15	n	23	23.2	36.0	19.6	35.0
Hywind	Demo	Implemented	6	178	5	30	23	n	7	25.9	29.0		
Atlantic Array	3	Withdrawn	5	180	278	1390	14	n	37	28.4	37.5	20.9	27.5
Neart na Gaoithe	Sco 1	Consented	8-10	197 (208)	128	448	15	y	18	32.9	39.0	28.0	28.0
Beatrice Offshore	Sco 1	Construction	7	198	142	588	22	n	16	29.7	33.1	22.2	25.6
Navitus Bay	3	Refused	8	200	121	970	14	n	12	24.9	28.2	19.5	23.1
Walney 1	2	Implemented	3.6	202 (137)	93	186	15	y	17	23.2	23.4	16.5	18.8
Rampion	3	Construction	3.6-7 (3.45)	210 (140)	175	400	13	n	29	26.4	29.5	19.9	30.0
Walney Extension		Implemented	8.25	222	207	659	19	y	17	25.6	32.3		
Burbo Bank Extension		Implemented	3.6	223 (187)	36	254	7	y	18	21.7	30.6	15.1	22.0
									Averages	**26.2**	**31.9**	**20.2**	**26.3**
Thanet Extension		Submitted	8-12	250	34	340	8	y	18	26.3	44.1	16.1	19.9
Seagreen	3	Consented	12.5	280	120	1500	27	y	13	35.3	38.0	32.0	32.0
Moray East	3	Construction	9.5	280	137	1116	22	n	22	42.0	49.0	27.0	34.0
Moray West	3	Consented	10-12	285	85	1116	22	y	25	40.8	53.0	25.8	28.0
Inch Cape	Sco 1	Consented	9.5	291	72	1000	15	y	26	42.0	52.5	29.7	34.8
East Anglia ONE North	3	Submitted	12-19	300	53	800	36	n	17	42.9	48.8		
East Anglia TWO	3	Submitted	12-19	300	60	900	31	n	22	40.6	47.7	34.2	37.6
									Averages	**38.6**	**47.6**	**27.5**	**31.1**

* Shows as assessed in SVIA (implemented capacity in brackets) ** in SVIA (implemented height or number in brackets). Note: *** Low magnitude category includes equivalent of low and medium/low

Table 7.3 Summary of SVIA visual effects of offshore wind farms

Offshore wind farm SVIAs	Low magnitude of effect		Medium magnitude of effect	
Heights of turbine to blade tip (m)	Average Distance km	Maximum Distance km	Average Distance km	Maximum Distance km
107-145	**19.2**	26.1	**14.0**	15.0
150-175	**21.7**	26.5	**15.8**	17.7
176-223	**26.2**	31.9	**20.2**	26.3
250-300	**38.6**	47.6	**27.5**	31.1

Figure 7.1 Low magnitude of effect for different height turbines- average SVIA distances

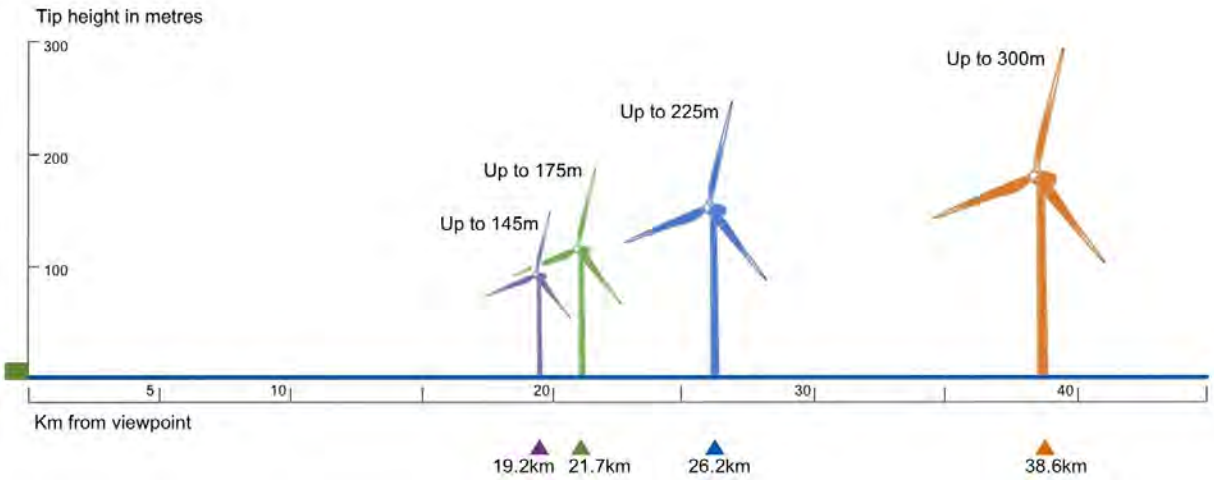
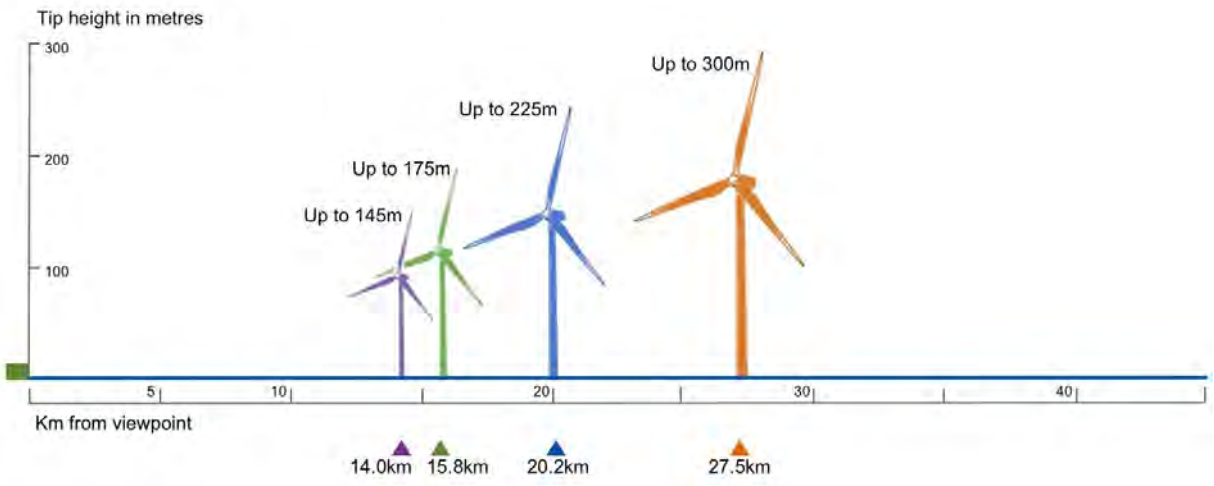


Figure 7.2 Medium magnitude of effect for different height turbines- average SVIA distances



7.69. It should be noted that the Greater Gabbard SVIA does not contribute to the analysis because all the visual effects are greater than medium. The SVIA found that visual effects on receptors were substantial up to 29km and moderate-substantial up to 33.5km. This reinforces the need for a precautionary approach when using the summary thresholds.

Analysis excluding wind farm extensions

7.70. As previously mentioned, the extensions of wind farms at Walney, Burbo Bank and Thanet are likely to be assessed as having lower additional visual effects as additional elements to the adjacent existing wind farm baseline. This has the effect of reducing the threshold distances. If the analysis of these wind farm extensions is excluded the following thresholds shown in **Figure 7.4** would apply. This indicates that the threshold distances for the two larger size ranges of turbines are increased between 0.6-2.2km.

Table 7.4 Summary of SVIA visual effects of offshore wind farms excluding extensions

Offshore wind farm SVIAs	Low magnitude of effect		Medium magnitude of effect	
Heights of turbine to blade tip (m)	Average Distance km	Maximum Distance km	Average Distance km	Maximum Distance km
107-145	**19.2**	26.1	**14.0**	15.0
150-175	**21.7**	26.5	**15.8**	17.7
176-223	**26.8**	32	**20.9**	26.9
250-300	**40.6**	48.2	**29.7**	33.3

Analysis based on number of turbines in array

7.71. A visual impact analysis for all the 28 schemes based on the number of turbines within each is set out in **Appendix F**. This indicates that there is no strong correlation between the number of turbines in an array and the expected magnitude of effect.

7.72. North Hoyle, as a small array of 30 turbines, does have the shortest average and maximum distance for low magnitude of effect. Kentish Flats, also with 30 turbines, also has the smallest distance for maximum medium magnitude of effect. However, West of Duddon Sands, which is relatively large with 139 turbines, has the smallest average distance for medium magnitude of effect. North Hoyle has the smallest wind turbines assessed at 107 m to blade tip.

7.73. East Anglia One North, with 53 turbines, has the largest average and maximum distance for low magnitude of effect. Inch Cape, with 72 turbines, has the largest distance for average and maximum magnitude of effect. These two wind farms also have the largest turbines- 291m and 300m to blade tip.

7.74. It is possible that some of the results could be explained by a correlation between the size of wind turbine and the spacing of turbines which means that the larger the turbine, the larger the array. The analysis does not include the physical dimensions of the arrays or their juxtaposition with viewpoints.

7.75. It is also possible that some variation can be put down to the different approach of assessors as well as other factors such as other wind farms as part of the baseline.

SUMMARY AND DISCUSSION

7.76. SVIAs for 28 wind farms from Rounds 1, 2, 3, STW and wind farm extensions have been analysed. The distances at which both low and medium magnitude of visual effect have been extracted for four ranges of turbine sizes.

7.77. Including all wind farms analysed, the range at which low magnitude of effect occurs is from average 19.2km for turbines up to 145m height to blade tip to average 38.6km for turbines up to 300 m high. A low magnitude of effect may have a significant effect on a high or very high sensitivity receptor such as a coastal National Park or AONB, or a visitor to a World Heritage Site.

7.78. The range at which medium magnitude of effect occurs is from average 14km for turbines up to 145m height to blade tip to average 27.5km for turbines up to 300m high. A medium magnitude of effects may have a significant effect on medium or medium to high sensitivity receptors.

7.79. The thresholds of effects derived from these analyses are lower than both the OESEA3 background report (2016) and NRW studies (2019). This is likely to be due to the following combination of factors:

- This analysis includes judgements of medium-low in the range of low magnitudes of effects- this influences the thresholds of low effect in all turbine height ranges.
- There are a greater number of assessments informing the analysis of wind farms, including those with higher turbines, but also smaller demonstration wind farms like Kincardine and wind farm extensions are included.
- The grouping of different heights/sizes of turbines is slightly different between this analysis and OESEA3 background report, and so the two are not directly comparable. The latter groups turbines of 3-6MW together i.e. up to around 180m high.

7.80. The distances set out in **Table 7.4** are considered to be preferred as possible buffer distances than **Table 7.3,** albeit the differences are small. This is because the SVIAs judgement of effects of wind farm extensions is likely to be less because the existing wind turbines are taken into consideration as part of the baseline. The latter distances have still been used in diagrams as these include all wind farms analysed.

7.81. The visual impact analysis of schemes based on the number of turbines does not indicate that there is a strong correlation between the number in an array and the expected magnitude of effect. This does not therefore contribute to the findings taken forward.

7.82. The thresholds for average low magnitude effects in this report are considered to be indicators for minimum thresholds as it is considered likely that effects on high sensitivity receptors could be significant around these distances. They may understate buffer thresholds in areas with highly sensitive individual or combined receptors (such as national landscape designations with strong coastal/seascape special qualities) and no existing development. The NRW (2019) reports which have larger buffer distances are considered to remain a valid expression of the analysis carried out on a slightly different basis and with slightly fewer wind farms considered. These should continue to form a basis for consideration within Welsh waters but the updated findings of this SEA can also inform these discussions.

8. Offshore wind farm scenarios wireline analysis

Introduction

8.1. While some conclusions can be drawn from SVIAs of Round 1- 3 and STW wind farms it is considered important for the study to understand the impacts of larger turbines which are likely to come forward in the future. The SVIAs analysed consider turbines up to 300m high to blade tip. Some wind farms further offshore are now considering wind turbines up to 370m high to blade tip e.g. Hornsea 4. Wirelines are used in this report to explore the potential visual effects of wind turbines 350m and 400m high to blade tip. The size of array, heights of viewpoints and distances of arrays offshore are considered to be representative of typical situations and wind farms in the UK which may have effects on coastal receptors.

Method

8.2. Wireline scenarios have been prepared for the two different heights of turbines in two different sizes of arrays either on their own or in a cumulative impact situation with existing wind farms.

8.3. For larger turbines in deeper water at +40m depth the use of jacket foundations is now often used. This has been applied to the 350m/400m turbines whilst the standard monopile design is used for the 3.6MW turbines in the cumulative scenarios.

8.4. The larger turbines are set out in an offset grid, in accordance with spacings in consented large turbine wind farms i.e. 6x7.5 turbine rotor diameter (Rampion). This is a moderate size spacing rather than a compact spacing. Smaller turbines are placed in an offset grid with spacing in accordance with outline findings of a BWEA offshore report (BWEA, 2008).

8.5. A basic scenario of a 500MW wind farm (around 25 turbines) with either 350m high turbines or 400m high turbines is set out in a virtual seascape with no other features. The arrays are placed at 13km, 18km, 24km and 35km from the coast to represent a realistic range to explore the magnitude of effects. For each layout, wireline views on the coast have been derived at viewing heights of 22m AOD. These simulate views respectively from low-lying hills such as found in eastern England and from lower cliffs found in other parts of England.

8.6. A second set of wirelines sets out 350m or 400m high turbines in a large array (around 80 turbines) consistent with those coming forward. These are viewed at different distances and at different viewing heights AOD. The distances are 13km, 24km, 35km and 44km at viewing heights of 6m, 22m and 100m AOD. These simulate views respectively from promenades, low-lying hills such as found in eastern England and from cliffs and coastal hills elsewhere.

8.7. Three cumulative scenarios are illustrated to show arrays of larger turbine sizes at distance seen against smaller turbines closer inshore. These are:

- 350m high turbine array at 24km, 220m high turbine array at 13km and 147 m high turbine array at 7km
- 350m high turbine array at 35km, 220m high turbine array at 13km and 147 m high turbine array at 7km
- 350m high turbine array at 24km, 350m high turbine array at 13km and 147 m high turbine array at 7km

8.8. A similar exercise was carried out for smaller turbines in the 2009 and 2016 OESEA background reports. It should be noted that there are limitations with this wireline

method of visualisation. The turbines are rendered dark grey rather than the white or very light grey and yellow of actual turbines. The effect of the atmosphere with its associated visibility modifiers such as haze or mist also cannot be taken into consideration. Overall, this may mean the wirelines exaggerate the contrast of the turbines with their background and show a worst case visibility scenario. This is more marked for turbines at a greater distance away from the viewer.

8.1. The wirelines have been prepared to be consistent with the 2009 and 2016 studies wirelines. Cylindrical rather than planar projection is used. The latest Landscape Institute visual representation guidelines (2019) have therefore not been followed partly as the final version of the guidance was published after the assessment was carried out and partly as using wirelines prepared to a different method might change the perceived magnitude of effect, although unlikely.

8.2. The wirelines were constructed using a virtual 50mm lens field of view (as for a 35mm camera) with a viewing distance of around 33-51cm for an A3 sheet depending on the single wind farm scenario and 51cm for an A1 sheet for the cumulative scenario. This produces a geometrically accurate image. However, the human eye records more detail in this than can be captured by a 2D image and so turbines are likely to appear larger in reality. The DTI (2005) guidance refers to this (p68, 69) and recommends that wirelines or photomontages should be taken on site to viewpoints so judgements can be made in the field with the actual scale of the seascape apparent. SNH (2017) guidance on wind farm visualisations recommends that photomontages should be viewed at a comfortable arm's length (104) and wirelines at an A1 paper width (820mm) (157). This is mainly to ensure that members of the public can appreciate the likely size of development rather than for professional use. In this case, the wirelines were printed for professional assessment and assessed at A3 for single wind farm scenarios and A1 for cumulative scenarios. Two chartered landscape architects (A and B) with experience in assessing wind farm development assessed the magnitude of effects of the wirelines separately using the definitions set out in DTI (2005) (see **Table 5.2**). Both assessments are shown.

8.3. For our exercise we have undertaken only a desk study assessment of scale/size of effect. This possibly balances the apparently reduced size of the wireline image with the effect of visibility modifiers reducing contrast of the turbines with their background. It is accepted the latter are likely to be more significant with increasing distance (to be considered in detail in Part 2 of the report). As a simple image the wireline also excludes the potential effect of intervening coastline or features which may increase the apparent magnitude of effect by giving scale to the proposals. Sample wireline extracts are shown in **Figures 8.1 and 8.2.**

Figure 8.1 Wireline Sample 1- 350m high wind turbines at 13km viewed at 22m AOD

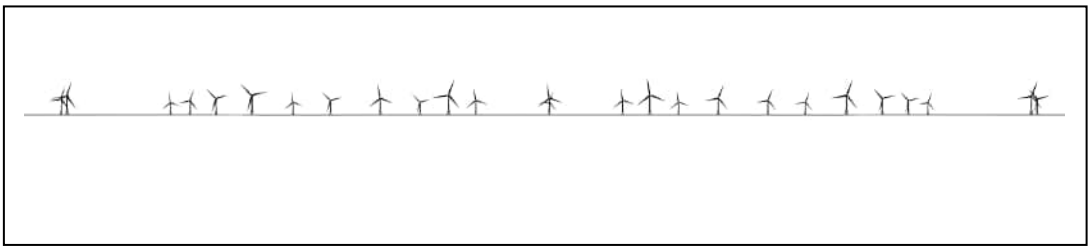
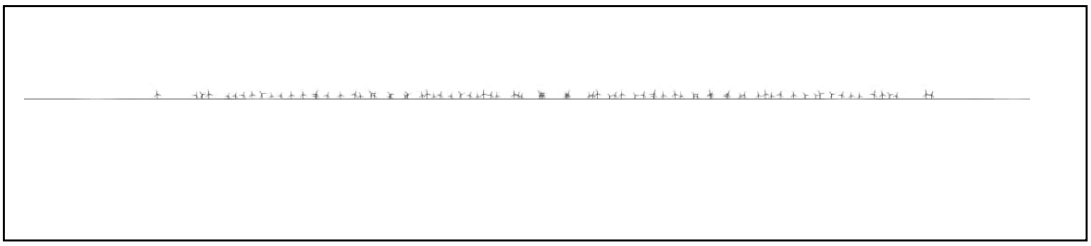


Figure 8.2 Wireline Sample 2- 400m wind turbines at 44km viewed at 22m AOD



Analysis

8.4. The assessment for each 500MW scenario derived from assessments carried out in 2009 and 2016 and for this study (see **Appendix E1**) is set out in **Table 8.1** below. The wireline views are shown in **Appendix E3** and underpinning scenario plans in **Appendix E2**.

Table 8.1 – View of potential magnitude of effects for each 500MW offshore wind farm scenario viewed at 22m AOD

Turbine height m /capacity (MW)	Distance from shore/viewpoint			
	13km	18km	24km	35km
137 (3.6)	Moderate and moderate/large	Small and small/ moderate	Small	n/a
175 (5)	Moderate and Large	Moderate and moderate/ large	Small and small/moderate	n/a
190 (7/8)	Moderate and Large	Moderate and Large	Small	Very small
220 (10)	Large	Moderate and Large	Small and small/moderate	Very small
250 (15)	Large	Moderate/ large and large	Moderate	Very small
350 (20)	Large and Very Large	Large	Moderate	Small
400 (20+)	Large and Very Large	Large and Very Large	Moderate and Large	Small and Moderate

8.5. Based on the above for 500MW wind farms, for **high sensitivity** receptors (where a small (or low) magnitude of effect is found at the following maximum thresholds):

- For 137m/3.6MW turbines the threshold of no significance is *beyond* 24km.
- For 175m/5MW turbines the threshold of no significance is *beyond* 24km.
- For 190m/7-8MW turbines the threshold of no significance is *beyond* 24km (because there is a small assessed effect at 24km and so the threshold for small is at or just beyond 24km but less than 35km where a very small effect is expected).
- For 220m/10MW turbines the threshold of no significance is *well beyond* 24km but less than 35km (because there is a small and small/moderate assessed effects at 24km and so the threshold for small is well beyond this distance but less than 35km where a very small effect is expected).
- For 250m/15MW turbines the threshold of no significance is *well beyond* 24km but less than 35km.
- For 350m/20MW turbines the threshold of no significance is *beyond* 35km.
- For 400m/20MW+ turbines the threshold of no significance is *well beyond* 35km.

8.6. For **medium sensitivity** receptors (where a medium magnitude of effect is found at the following maximum thresholds):

- For 137m/3.6MW turbines the threshold of no significance is *between 13*-18km.
- For 175m/5MW turbines the threshold of no significance is *between 18*-24km.
- For 190m/7-8MW turbines the threshold of no significance is *between 18*-24km.
- For 220m/10MW turbines the threshold of no significance is *between 18*-24km.
- For 250m/15MW turbines the threshold of no significance is *beyond* 24km.
- For 350m/20MW turbines the threshold of no significance is *beyond* 24km.
- For 400m/20MW+ turbines the threshold of no significance is around 35km.

8.7. The assessment for the large wind farm scenario derived from assessments carried out for this study is set out in **Table 8.2** below (see **Appendix E4** for second set of wirelines and **Appendix E2** for the scenario plan).

Table 8.2 – View of potential magnitude of effects for a large offshore wind farm scenario viewed at 6m, 22m and 100m AOD

Turbine ht m /capacity (MW)	Distance from shore/viewpoint			
	13km	24km	35km	44km
350 (20)	Very large/large and Very Large	Moderate	Small	Very small
400 (20+)	Very large/large and Very Large	Moderate	Small	Very small

8.8. In relation to viewing 350m and 400m high turbine wind farms from different heights (6m, 22m and 100m AOD) the assessors found that the level of effects were the same at each height. This finding coincides with the 2009 and 2016 studies as set out in Chapter 2 and **Appendix E1**. Wind farms appear more coherent and potentially slightly smaller in scale

when viewed from higher viewpoints. This is because their bases, towers and layout can be seen in the context of a wider sea view. The effect is most apparent in the closest wireline scenario of 13km reducing significantly for further scenarios. This difference in perception is not sufficiently substantial to merit a different evaluation of scale of effect. At longer distances more of the turbines can be seen above the horizon from higher viewpoints. Again, for the size of turbine and the distances assessed, there is not sufficient difference to arrive at a different scale of effect.

8.9. For the large wind farm scenario, for **high sensitivity** receptors (where a low or small magnitude of effect is found at the following maximum thresholds):

- For 350m/20MW turbines the threshold of no significance is *beyond* 35km.
- For 400m/20MW+ turbines the threshold of no significance is *beyond* 35km.

8.10. For **medium sensitivity** receptors (where a medium magnitude of effect is found at the following maximum thresholds):

- For 350m/20MW turbines the threshold of no significance is *beyond* 24km.
- For 400m/20MW+ turbines the threshold of no significance is *beyond* 24km.

8.11. It is noted that the judgements of effect by one assessor of the 400m turbine at 24km and 35km are, contrary to expectation, less for the larger wind farm scenario (**Table 8.2**) than the 500MW scenario (Table 8.1). The wireframe scenarios had different viewing distances and this may have underplayed the visual effects of the larger wind farm. Nevertheless overall trends can be discerned.

SUMMARY

8.12. Wirelines are used in this report to explore the potential visual effects of wind turbines 350m and 400m high to blade tip. The ranges of size of array, heights of viewpoints (6m, 22m and 100m AOD) and distances of arrays offshore (13km, 18km, 24km, 35km and 44km) are considered to be representative of typical situations and wind farms in the UK which may have effects on coastal receptors.

8.13. For a sample 500MW wind farm, a small (or low) magnitude of effect was found beyond 24km for 137m high turbines and well beyond 35km for 350m or 400m high turbines. A low magnitude of effect may have a significant effect on a high or very high sensitivity receptor such as a National Park or AONB.

8.14. For the same sample 500MW wind farm, a medium magnitude of effect was found between 13-18km for 137m high turbines and around 35km for 350m or 400m high turbines. A medium magnitude of effects may have a significant effect on medium or medium to high sensitivity receptors.

8.1. For the large wind farm scenario, a small (or low) magnitude of effect was found beyond 35km for 350m or 400m high turbines. As above, a low magnitude of effect may have a significant effect on a high or very high sensitivity receptor such as a National Park or AONB.

8.2. For the large wind farm scenario, a medium magnitude of effect was found beyond 24km for 350m or 400m high turbines. As above, a medium magnitude of effect may have a significant effect on medium or medium to high sensitivity receptors.

8.3. In relation to viewing wind farms from different heights (6m, 22m and 100m AOD) the assessors found that the level of effects were the same at each height.

9. Marine Visibility Modifiers

Introduction – Range of Modifiers

9.1. Offshore meteorological conditions can greatly affect the distance that wind farms can be seen. Seasonal and diurnal patterns of visibility for coastal environments are significantly different to onshore sites and generally visibility is higher (Lawrence, 1976). This is largely to do with meteorological effects associated with coastal regions.

9.2. This chapter will look at the influence of marine visibility modifiers on the visible offshore distance. Various studies on general visibility and the visibility of offshore wind farms in particular are explored.

9.3. DTI (2005) recommends the use of Met Office weather data for SVIAs to assess trends in conditions over a 10 year period for stations located landward of proposed wind farm sites. For this level of research a full range of data would prove extremely expensive and therefore the data used has been limited to representative locations and broad factors at a regional level.

9.4. Detailed visibility data has been obtained from the Met Office for eight coastal weather stations around English and Welsh coastlines. Broad sunshine and rainfall data are also discussed. In addition, seasonal trends and variations are briefly explored for some coastal stations based on data collected for the 2009 OESEA study (see **Appendix G**).

REVIEW OF GUIDANCE AND ASSESSMENTS

SNH (2005): An assessment of the sensitivity and capacity of the Scottish seascape in relation to wind farms

9.5. The SNH report refers to the meteorological effects on visibility in Scotland. Key conclusions with regard to coastal weather patterns are that:

- The visual range for Scotland is significantly higher than that for England and Wales and visual range on the north west of Scotland is consistently high.
- Highest values of visibility tend to occur in the afternoon whilst poor visibility builds up during the night. Clear views of turbines at sunset are more likely than at sunrise, making seascapes with aspects towards sunset slightly more sensitive in this respect.
- In Britain, excellent visibility is associated with unstable polar airstreams, particularly if these come directly from more northern latitudes and across sea tracks rather than urban areas.
- Haar (sea fret) is a phenomenon which occurs on the east coast of the UK north of The Wash. In late spring/early summer a light easterly wind is driven across the North Sea due to high pressure in Scandinavia. This air is cooled by the sea and leads to large scale condensation, so forming sea fog and low stratus cloud across the coast. Unlike other fogs, haar can exist in wind speeds up to 9 miles an hour. The most affected area is the strip from the Humber to the Tweed.
- Windows of exceptional visibility exist just after rain and before evaporation occurs, in Scotland, these windows are likely to occur more frequently.

Bishop & Miller (2006) Visual Assessment of offshore wind turbines: The influence of distance, contrast, movement and social variables

9.6. This report sets out research and analysis on the parameters which determine the visual impact of offshore wind turbines. The key conclusions relating to the effects of meteorology on visibility are:

- Distance remains clearly important in determining the visual magnitude of developments, however, contrast between the turbines and their background of sky is also important and needs to be quantified. In the northern hemisphere a wind farm off a south-facing coast will typically have full sun on the exposed side of the turbines much less than a farm off a north facing coast.
- Although different parties are not going to agree on impacts, application of an impact estimation process based on empirical research at least forces the factors to be considered into the open and makes the parameters explicit. This provides something concrete which can be argued over rather than poorly defined personal concepts of visual impact without substantiation.

Husar and Husar (1998): Global Distribution of Continental Haziness, Washington University

9.7. Visibility is a standard meteorological variable recorded globally at all synoptic weather stations. The visual range, or visibility, is the maximum distance at which an observer can discern the outline of an object. The visual range in the atmosphere is reduced mainly by the presence of aerosol particles. These can be either hydrometeors or haze particles. Hydrometeors are large droplets or crystals of water (>5μm) and can occur as rain, fog, clouds and snow. Haze is used as a generic term that includes smoke, dust, sea spray, as well as marine and continental haze.

9.8. Husar & Husar present the following formula for calculating the maximum distance at which an observer can discern the outline of an object (as modified below in SNH 2005).

$$V = \frac{C}{E}$$

V = Visual Range

C = Constant determined by the threshold sensitivity of the human eye and the assumed contrast of visible objects against their background.

E = Extinction coefficient–a measure of how much haze is in the air.

9.9. **Table 9.1** indicates the maximum likely viewable distance at which the outline of an object can be made out given a range of UK specific coefficients.

Table 9.1 The influence of haze on viewable distance

Applicable Area and Season	Haze Coefficient (E)	Viewable Distance (V)
Northern Scotland	0.1	39km
Wales (Spring and Summer). Central and Southern Scotland (Summer to Winter)	0.15	26km
Central & Southern England (Spring). Central England, north & south Wales (winter). Parts of south & NE England (summer)	0.2	19.5km
Southern England (winter)	0.25	15.6km

(Source: Husar & Husar, 1998 – Assumes a 'C' value of 3.9 as noted as generally used in SNH (2005) p159

9.10. The viewable distance represented in the table above does not include the impact of meteorological phenomena hydrometeors (e.g. rain, snow).

Taylor (2004): How do weather conditions affect visual impact of an Off Shore Wind Farm?

9.11. Taylor (2004) investigated the visual impact of North Hoyle offshore wind farms in relation to weather conditions in order to try and understand their connection. The study was a student essay and used secondary amateur weather data recorded daily from a weather station located at Llysfaen on the North Wales coast. Whilst the study stated that whole year's sampling would be ideal, the survey was undertaken over 11 mornings over a period of just over two weeks in July 2004. Seven sites in all were visited on each morning with a period of five minutes allowed for each site. A data sheet was filled out, an estimate of visibility was made and a typical visibility score attributed. A basic system of scoring visibility from 0-10 (where 0 is obscured and 10 is an obvious visual 'intrusion') was used following consultation with CCW. A photograph was then taken during the typical conditions prevailing during the five-minute period.

9.12. The results of the study showed that on 54% of the days measurements were taken, the visual impact of the wind farm was at best (or worst) negligible due to weather conditions.

9.13. The report concluded that the extent to which weather conditions control visibility is such that in some conditions, even 'distant' viewpoints can have unpredicted and unusually high scores.

9.14. "*Visibility seems not to decrease exponentially…instead it seems to reduce as the distance increases, until around 18-20km it falls drastically and then levels out…from this drop out point the visual impacts are not at all intrusive on the seascape and it often becomes completely obscured.*"

9.15. It should be noted that terms such as 'intrusive' are used by a layman rather than a professional but the study is considered as a useful and carefully worked through contribution giving a snapshot of an existing wind farm's visibility.

Met Office visibility definitions

9.16. The Met Office sets out definitions for the different ranges of visibility ranging from 'very poor' to 'excellent' as follows:

- Very poor visibility - range is less than 1 km;
- Poor visibility - range is 1 to 4 km;
- Moderate visibility - range is 4 to 10 km;
- Good visibility - range is 10 to 20 km;
- Very good visibility - range is 20 - 40 km; and
- Excellent visibility - range is over 40 km.

9.17. In the PIER SLVIA (2011) for East Anglia TWO, they note that:

'It is reasonable to conclude that the prevailing visibility and weather conditions combine to reduce the duration and potential for significant effects to periods when clear views of the (East Anglia TWO) wind farm site are available…. Whilst this 'visibility' analysis is a useful indicator other factors such as contrast (largely influenced by lighting by the sun) scale, orientation and movement of the structures also need to be considered when determining the likely impact of optimum visibility at a certain range.'

9.18. Commentary: Both the frequency of visibility and the other factors mentioned are valid considerations in helping to consider the likelihood of significant effects. However, SLVIAs should note the worst case situation in excellent visibility and then make a judgement taking into account the other factors.

9.19. The SLVIA (2019) scoping for East Anglia TWO justifies a study area of 50km, based on SNH (2017) guidance and an analysis of Met Office Data from Weybourne and Shoeburyness. This stated that visibility over 50km was only possible for 9% of the time in the 10 year period 2007-2017. It was concluded that visual effects beyond 50km were unlikely to be significant. This was agreed in consultation and the Planning Inspectorate's scoping opinion (section 4.24) stated that effects beyond 50km could be scoped out. The SLVIA goes onto state that significant effects are most likely in the closer areas and less likely in the outer edges of the study area.

Other research findings taking weather conditions into account

9.20. An online search for research on the visibility of offshore wind turbines has yielded two studies with relevant findings.

9.21. Research was undertaken in 2012 led by Argonne National Laboratory based in the USA[9]. This was based on fieldwork and reporting of observations carried out in the UK in relation to a number of offshore wind farms located in the Irish Sea and the English Channel.

9.22. The objectives included identifying the maximum distances that wind farms could be seen in both daytime and night-time views and assessing the effect of distance on visual contrasts associated with the structures.

9.23. The eleven wind farms assessed included Rhyl Flats, North Hoyle and Walney 1 to the west and Greater Gabbard and Thanet to the east. These use mainly 3.0MW and 3.6MW turbines up to 150m high (Walney) with arrays from 25 turbines (Rhyl Flats) up to 140 (Great Gabbard).

9.24. The visibility assessments consisted of numeric ratings on a scale of 1 to 6, scored on the visibility of a wind farm within its landscape/seascape setting and for the weather and lighting conditions at the time of the observation. These are summarised as:

- Visibility Level 1- Visible only after extended, close viewing; otherwise invisible.
- Visibility Level 2- Visible when scanning in the general direction of the study subject; otherwise likely to be missed by casual observers.
- Visibility Level 3- Visible after a brief glance in the general direction of the study subject and unlikely to be missed by casual observers.
- Visibility Level 4- Plainly visible, so could not be missed by casual observers, but does not strongly attract visual attention or dominate the view because of its apparent size, for views in the general direction of the study subject.
- Visibility Level 5- Strongly attracts the visual attention of views in the general direction of the study subject. Attention may be drawn by the strong contrast in form, line, color, or texture, luminance, or motion.

[9] Sullivan, R., Kirchler, L., Cothren, J., & Winters, S. (2013). RESEARCH ARTICLE: Offshore Wind Turbine Visibility and Visual Impact Threshold Distances. *Environmental Practice, 15*(1), 33-49. doi:10.1017/S1466046612000464

- Visibility Level 6- Dominates the view because the study subject fills most of the visual field for views in its general direction. Strong contrasts in form, line, colour, texture, luminance, or motion may contribute to view dominance.

9.25. In total there were 49 daytime observations of 11 wind farms from 29 onshore locations, with six additional observations at night. Three observers were involved- a landscape architect, a geospatial visualization developer, and an archaeologist. Most days were partly to mostly cloudy and two days were sunny without fog. In general, visibility was judged to be good, although many observations included low contrast levels between shaded wind turbines and cloudy sky backdrops.

9.26. The results were that small to moderately-sized wind farms were visible to the unaided eye at distances greater than 42km with turbine blade movement visible up to 39km. At night, aerial hazard navigation lighting was visible at distances greater than 39km. The observed wind farms were judged to be a major focus of visual attention at distances up to 16km, were noticeable to casual observers at distances of almost 29km, and were visible with extended or concentrated viewing at distances beyond 40km.

9.27. The conclusions were that:

'even small offshore wind facilities of a few dozen turbines can be seen easily at distances exceeding 25km and that moderately sized facilities of 100 turbines are seen easily at distances of 35km or even farther, in a variety of weather and lighting conditions. At distances of 14km or less, even isolated, small facilities will likely be a major focus of visual attention in seaward views, again in a variety of weather and lighting conditions.'

9.28. Commentary: Overall, at this time there was a greater separation between a series of smaller wind farms than is now the case and so the likely levels of effect may be correspondingly less than the same view now. The weather/visibility was also not very good or excellent so the findings reflect normal scenarios, not worst case. This independent study is representative with a large number of observations during the day and night. Its objective judgements are helpful as a check relative to SVIAs with qualified professionals' judgements. Unfortunately it uses scales which do not correspond to those commonly used in the UK as measures of magnitude of effect but there are parallels to the descriptors devised in SNH (2005). For instance, the term 'noticeable' at distances up to 29km is an indicator of moderate magnitude which is likely to have a significant effect on sensitive receptors.

9.29. A further, more limited, study by a team from New York State in 2017[10] considered weather patterns around New York and photorealistic visual simulations of arrays of 8MW wind turbines 187m to blade tip.

9.30. It was concluded that beyond 32km (20 miles) from shore, turbines would become difficult or impossible to see in the majority of conditions. During around 77% of the daylight hours in a given year in New York, turbines placed 32km from the viewer would be very difficult to discern or invisible due to atmospheric conditions.

9.31. Offshore turbines would be possibly most visible in the morning, before 10 a.m., when colour contrast is highest with clear skies. The data showed this condition had the potential to occur only during approximately 8% of daylight hours of a typical year in New York.

[10] Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C December 2017 **Visibility Threshold Study** conducted by the State of New York

9.32. At a distance of 40km (25 miles), under even clear or partly cloudy skies, it was concluded that it was likely that a viewer would not notice the above-horizon portions of 187m high turbines unprompted, but rather would have to know they are there and actively look for them. The exception to this would likely occur under very specific lighting conditions involving a dark cloudy horizon and intense morning or evening sunlight at a low-angle illuminating the light grey turbines. Blade movement, although nearly impossible to discern at 40km, might draw the viewer's eye under specific particularly clear conditions.

9.33. An additional factor in some weather conditions would be sea spray which could serve to scatter and diffuse light—and therefore visibility—thus reducing the effective visibility range.

9.34. The study noted that there were numerous climate variables and that viewer experience was a much more complicated metric, as it is influenced by visual acuity, viewer activity, and a variety of environmental factors.

9.35. Commentary: This study is very limited and relates only to New York weather conditions. In the context of the buffers being considered in this study (Section 13) it is interesting that the thresholds of 32km and 40km are mentioned when considering turbines of 187m height.

VISIBILITY DATA FOR COASTAL STATIONS IN ENGLAND

Data Examined

9.36. In order to explore the variation of weather conditions off the English coast to the south, east and west, visibility data for eight coastal stations was acquired from the Met Office. In a clockwise direction- Boulmer (north east), Weybourne (east), Manston (south east), Hurn (south), Culdrose (south west), St Athan (south Wales), Rhyl (north Wales) and St Bees Head no 2 (north west) (see **Figure 9.2**). The data represents 10 years of hourly data on a monthly spread. To produce the data, automated recordings of visibility are carried out by determining the concentration of aerosols from a captured sample of air between two lasers. This is equated to a distance from which a distinct object or skyline can be viewed. This data does not take account of varying conditions that may exist at certain distances offshore and may therefore provide a distorted picture of the actual visibility. The individual and combined visibility of the stations is set out in **Table 9.2**.

Table 9.2 Visibility Distances for Coastal Stations over a 10 year period (2008-2017)

Weather Stations	Visibility Distance (km)							
	0-5	6-10	11-15	16-20	21-25	26-30	35	40+
Boulmer % days visibility	10.9%	12.7%	12.4%	16.3%	13.9%	12.7%	4.6%	16.5%
cumulative totals	100.%	89.1%	76.4%	64.0%	47.7%	33.8%	21.1%	16.5%
Weybourne % days visibility	9.9%	13.0%	13.5%	11.1%	9.8%	14.1%	6.0%	22.6%
cumulative totals	100%	90.1%	77.1%	63.6%	52.5%	42.7%	28.6%	22.6%
Manston % days visibility	10.7%	13.2%	12.7%	13.1%	12.8%	17.0%	6.7%	13.7%
cumulative totals	100%	89.3%	76.1%	63.3%	50.2%	37.4%	20.5%	13.7%
Hurn % days visibility	11.0%	13.1%	13.8%	19.7%	15.1%	20.3%	3.7%	3.1%
cumulative totals	100%	89.0%	75.8%	62.1%	42.3%	27.2%	6.8%	3.1%
Culdrose % days visibility	19.9%	16.1%	17.5%	28.7%	11.8%	4.6%	0.7%	0.7%
cumulative totals	100%	80.1%	64.0%	46.5%	17.8%	6.0%	1.4%	0.7%
St Athan % days visibility	6.5%	9.6%	10.7%	14.3%	14.7%	22.9%	9.2%	12.0%
cumulative totals	100%	93.5%	83.8%	73.1%	58.8%	44.1%	21.2%	12.0%
Rhyl % days visibility	5.4%	7.4%	11.5%	14.0%	13.8%	20.1%	8.8%	19.1%
cumulative totals	100%	94.6%	87.2%	75.7%	61.7%	47.9%	27.9%	19.1%
St Bees Head % days visibility	13.5%	12.7%	17.5%	21.8%	18.3%	10.3%	1.8%	4.0%
cumulative totals	100%	86.5%	73.8%	56.3%	34.5%	16.2%	5.8%	4.0%
Average % days visibility	11%	12.2%	13.7%	17.4%	13.8%	15.2%	5.2%	11.5%
Avg. cumulative totals	100%	89.0%	76.8%	63.1%	45.7%	31.9%	16.7%	11.5%

Figure 9.1 Average visibility distances related to % days per annum (2008-2017)

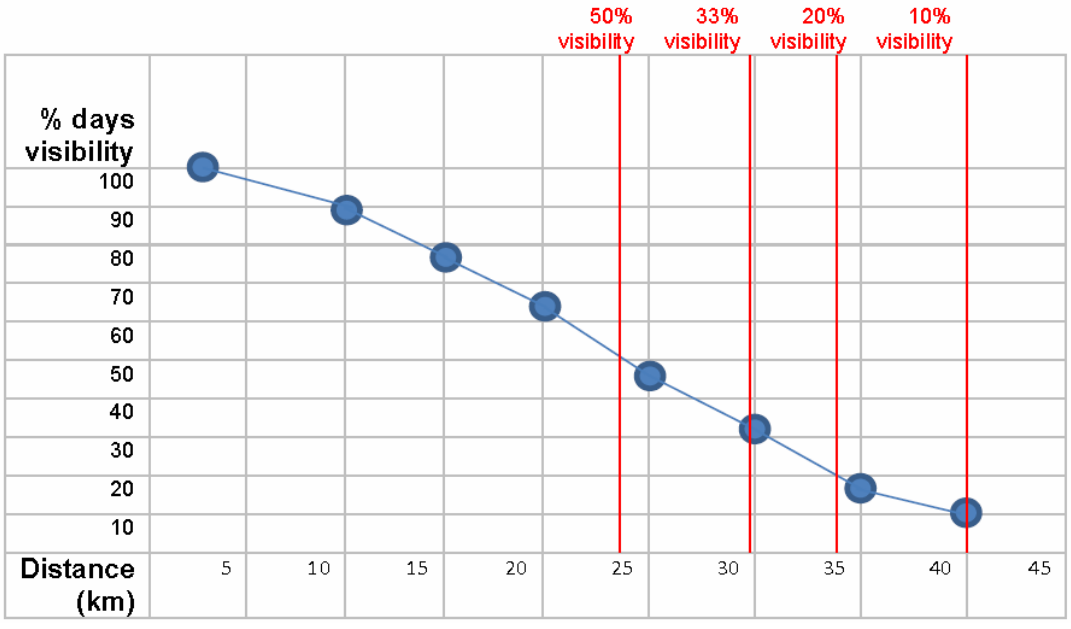
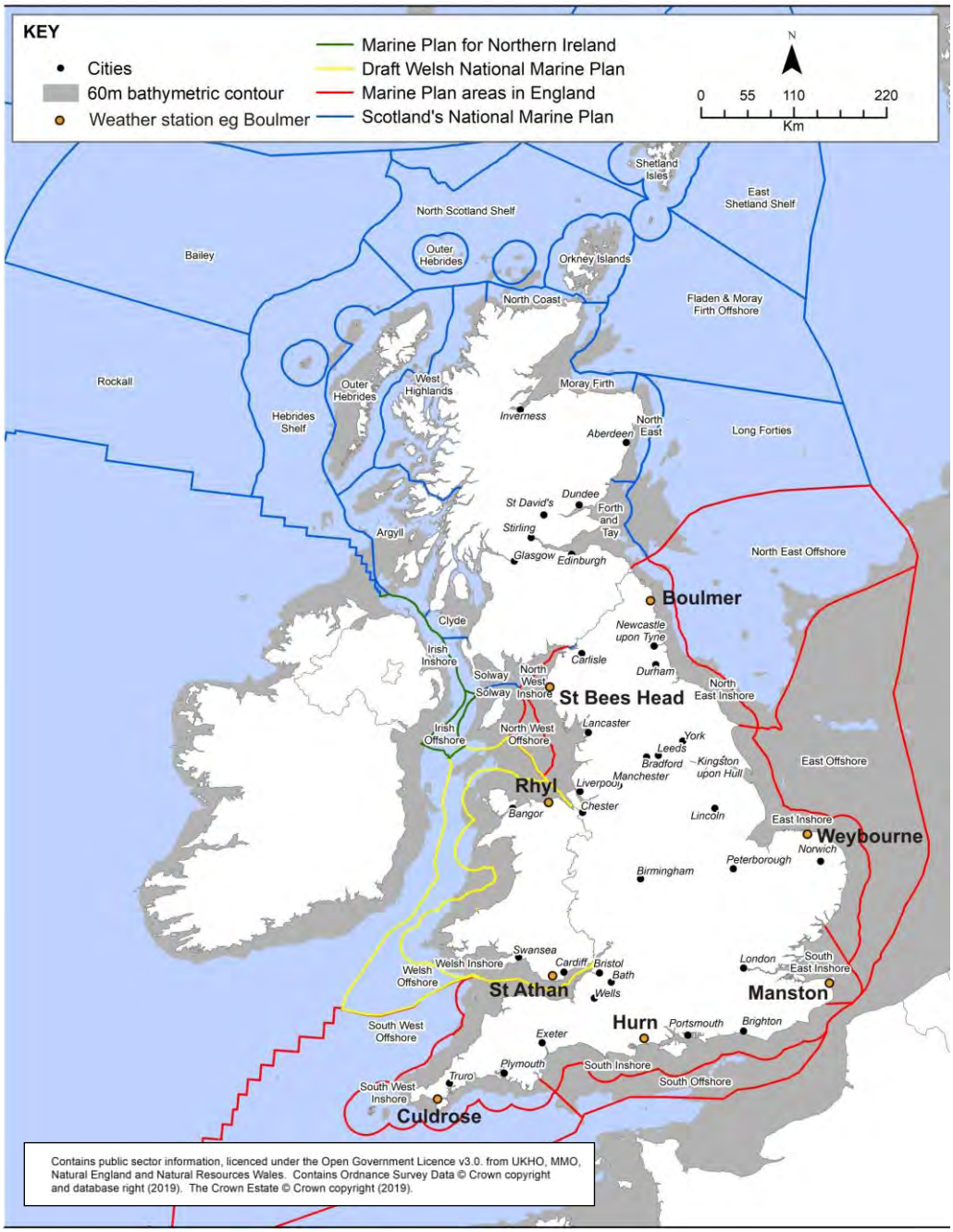


Figure 9.2 - Weather Station Locations



Observations

9.37. The main observations and comparisons from the Met Office data are summarised below:

- Averaging all coastal stations, the visual range recorded was just under 24km around 50% of the time, just under 30km 33% of the time, around 34km for 20% of the time, and 40km 10% of the time (see **Figure 8.1**).
- There is variability at different locations, with clearer visibility in eastern England and Wales and less in the coastal stations to the south and west of England.
- For Boulmer, Weybourne and Manston to the east around half the number of days have visibility at distances above 21km. Visibility above 35 km ranges between 20.5% of days (Manston) to 28.6% (Weybourne).

- For Wales, Rhyl and St Athan, half the days have visibility at the upper end of the 21-25km range. Visibility above 35km ranges between only 21.2% of days (St Athan) to 27.9% (Rhyl).
- For the southern and western England coastal stations of Hurn, Culdrose and St Bees Head half the days have visibility over the 16 to 20 km range. Visibility above 35km dips to between only 1.4% of days (Culdrose) to 6.8% (Hurn).
- The most frequent visibility at Boulmer (to the north east) and Weybourne (to the east) is over 40km, whilst at the other end of the scale, Culdrose (to the west) and St Bees Head (to the north west) it is most frequently between 16-20km. Hurn, St Athan and Rhyl's most frequent visibility range is 26-30km (around 20% of days).
- The dataset used is not large so these results may not be entirely indicative of all areas in the intervening coast and marine areas. The Culdrose statistics appear to be particularly at one end of the scale.

9.38. Data analysed in the OESEA 2009 report on patterns of seasonal variations on visibility are set out in **Appendix G**. These illustrate a clear pattern within the visual ranges on a monthly basis. The summer months (June–September) experience a much larger 'maximum percentage' visual range in comparison to the winter months (November–February) which experience a much lower visual range. It is likely that more people will be viewing the seascape in the summer, and for more prolonged periods, due to holidays and weekend trips, and more equable weather conditions. There is a case that this should be weighted in consideration of % of days visibility.

SUNSHINE AND RAINFALL DATA FOR UK COASTAL STATIONS (1981-2010)

9.39. Sunshine can affect visibility of wind farms by highlighting turbines when reflected off their surface. This is most likely to occur, with the sun behind the viewer, on north facing coasts followed by east or west facing coasts. Turbines can also be seen in silhouette, particularly at sunrise on east facing coasts or at sunset on west facing coasts with the latter being more sensitive as more receptors are likely to see this juxtaposition. Rainfall significantly reduces visibility of turbines. The areas with more days of rainfall are therefore potentially less likely to be a sensitive to wind farm development.

9.40. Met Office historical data on sunshine and rainfall was obtained for the recording stations located close to the stations selected for the visibility data.

Sunshine (Hours)

9.41. As shown in **Table 9.8**, average monthly sunshine hours throughout the year is in the range between 116 & 150 hours per month. This figure fluctuates depending on the month; however, sunshine hours in summer are generally much higher as would be expected.

Table 9.8 – Average monthly sunshine (hours) in England and Wales (1981-2010)

Helen's Bay (N Ireland)	St Athan (S Wales)	Hurn (S England)	Manston (SE England)	Boulmer (NE England)
116.4	139.4	147.2	150.2	128.9

(Source https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/*)*

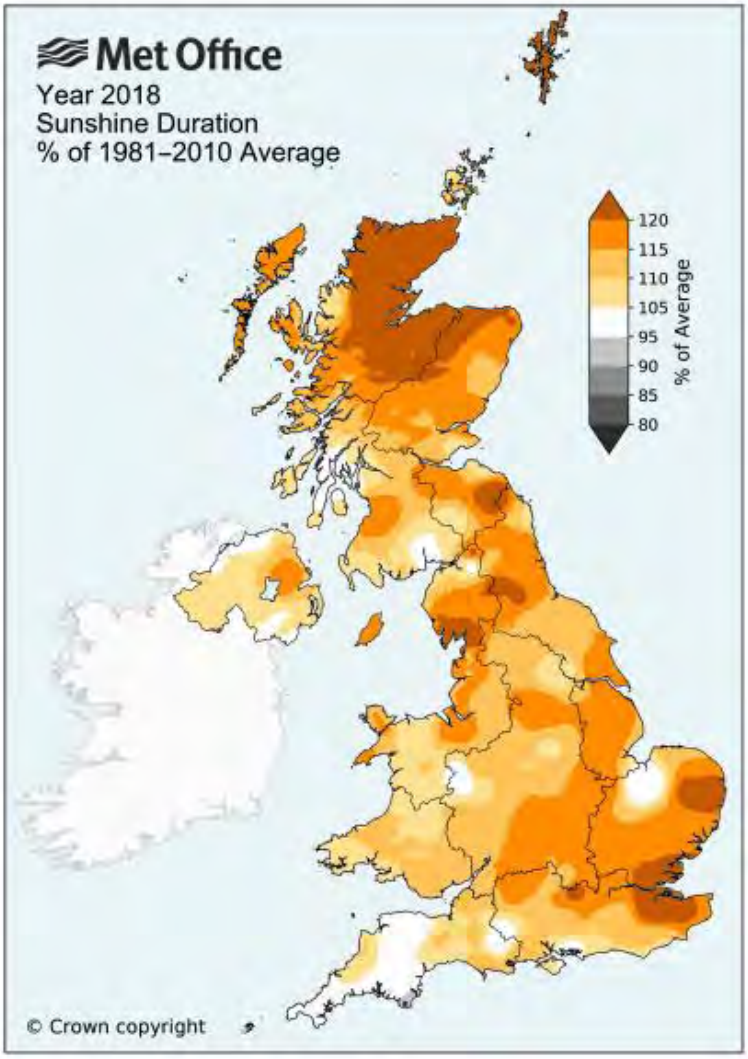
9.42. **Figure 9.3** shows the average annual sunshine amount for the UK (1981-2010). There are patches of higher than average sunshine in the far north of Scotland and Morecambe Bay

as well as in Norfolk and around the Thames Estuary. In general it is evident that there is generally more sunshine on the east coast than the west.

9.43. Subsidence associated with high pressure reduces cloud cover and in spring and summer, when the sea is cool relative to the land, there is little convective cloud over the sea. Coastal areas are then favoured by high sunshine amounts, whereas convective cloud often forms inland (Met Office).

9.44. Overall, it can be concluded that southern and eastern areas are sunnier and are likely to have clearer and more frequent visibility of wind farms than the west.

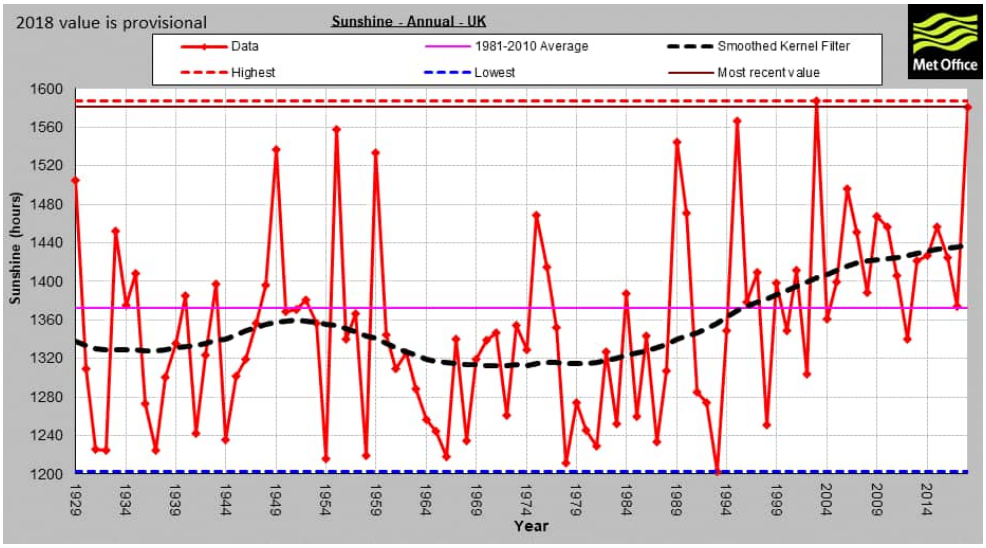
Figure 9.3 Average annual sunshine amount for the UK (1981-2010)



(*Source: Met Office*)

9.45. The trend over the past few years is for more sunshine, as indicated in the following graph from Met Office records:

Figure 9.4 Sunshine trend for the UK (1981-2010)



https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-temperature-rainfall-and-sunshine-time-series

Rainfall (mm)

9.46. As shown in **Table 9.9**, average rainfall and days with rain appears to be higher in Wales. Throughout Wales, the months from October to January are significantly wetter than those between February and September, unlike places in eastern England where July and August are often the wettest months of the year. This seasonal pattern is a reflection of the high frequency of winter Atlantic depressions and the relatively low frequency of summer thunderstorms (Met Office).

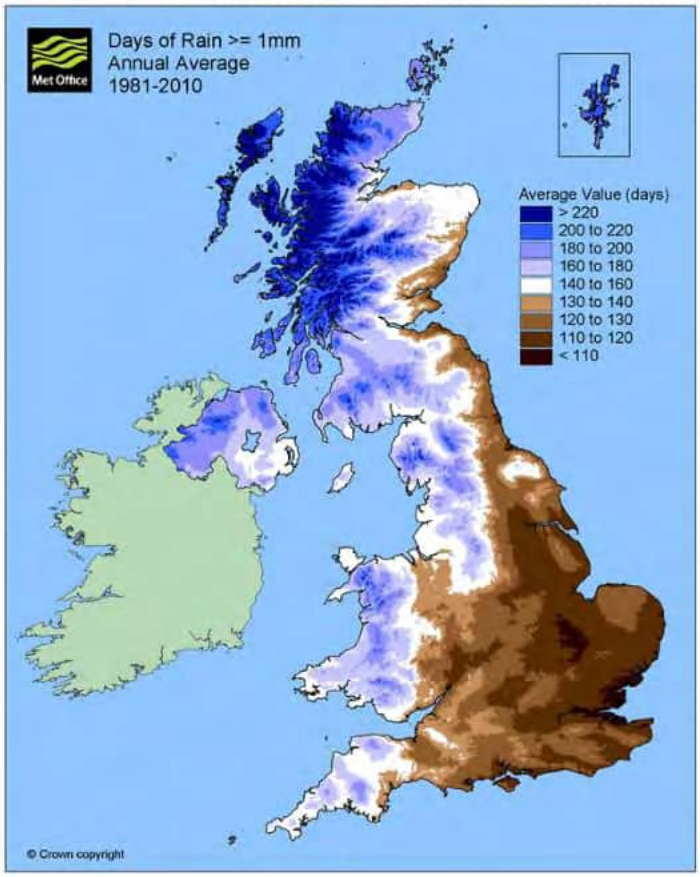
Table 9.9 – Average monthly rainfall (mm) in England and Wales (1981-2010)

Variable	Helen's Bay (N Ireland)	St Athan (S Wales)	Hurn (S England)	Manston (SE England)	Boulmer (NE England)
Average Rainfall (mm)	77.5	83.2	69.6	49.4	57.4
Days of Rain (>=1mm)	12.4	12.1	10.0	8.8	10.2

(Source https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/

9.47. **Figure 9.5** shows the average annual rainfall amount for the UK (>=1mm) (1981-2010). Overall it's clear that the east is drier than the west and there appears to be a fairly strong correlation between sunshine and rainfall. Whilst western Scotland has the highest rainfall in the UK, much of eastern Scotland is sheltered from the rain-bearing westerly winds. This shelter reaches its greatest potential along the coasts of East Lothian, Fife and the Moray Firth and these areas receive less than 700 mm of rainfall in an average year. Much of Southern England is relatively distant from the route of many Atlantic depressions and towards the Thames Estuary there is increasing shelter from rain-bearing SW winds. Overall, it can be concluded that southern and eastern areas are drier and are likely to have clearer and more frequent visibility of wind farms than the far north and west.

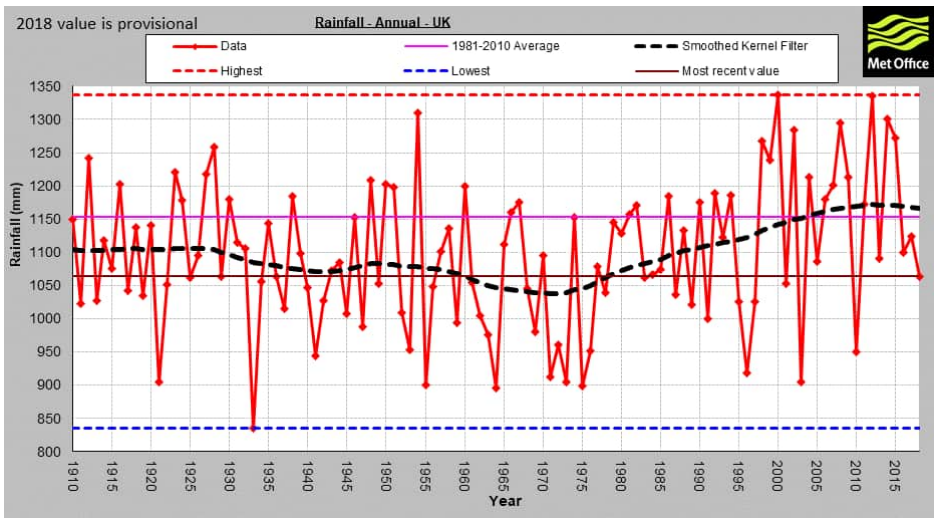
Figure 9.5 Average annual rainfall amount for the UK (>=1mm) (1981-2010)



(*Source: Met Office*)

9.48. Met Office data indicates a fluctuation of rainfall over the last 15 years as follows:

Figure 9.6 Rainfall trend for the UK (1981-2010)



https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-temperature-rainfall-and-sunshine-time-series

State of the UK Climate 2018

9.49. The report by the International Journal of Climatology 'State of the UK Climate 2018' provides a summary of the UK weather and climate through the calendar year 2018, alongside the historical context for a number of essential climate variables.

9.50. It notes the following:

- In 2018 rainfall for the UK overall was 92% of the 1981–2010 average and 96% of the 1961–1990 average.
- The most recent decade (2009–2018) has been on average 1% wetter than 1981–2010 and 5% wetter than 1961–1990 for the UK overall.
- In 2018, sunshine for the UK overall was 114% of the 1981–2010 average and the third sunniest year in a series from 1929.
- The UK's summer in 2018 was much warmer, drier and sunnier than average.
- For the most recent decade (2009–2018) the UK has had, on average, 4% more hours of bright sunshine than the 1981–2010 average and 7% more than the 1961–1990 average.

9.51. All this indicates that the extremes of weather (rain and sun) are increasing with potential for longer periods of both. These factors may balance each other out in terms of their effect on the frequency of visibility of offshore wind farms.

Summary and discussion

9.52. Some cautious conclusions can be drawn from the coastal weather station data. Averaging all coastal stations, the visual range recorded was just under 24km around 50% of the time, just under 30km for 33% of the time, around 34km for 20% of the time and 40km for 10% of the time.

9.53. To the east of England, visibility lies above 21km for more than half the time and above 35km for more than 20% of the time. The coast of Wales enjoys visibility at the upper end of the 21-25km range for half the time and above 35km around 21-28% of the time. To the south and west England, visibility appears to be less, lying above 16-20km for more than half the time but at 30km+ there appears to be a distinct cut-off point- visibility above 35km is between 1.4% and 6.8% of the time.

9.54. Uncertainties derived from the methodology used to collect some meteorological data and therefore subsequent interpretations introduce some concern about its use to inform wind farm buffers.

9.55. Although it has not been possible to obtain more detailed attributes of sunshine and rainfall, the number of days of sunshine and rain gives an initial idea of which areas could potentially experience higher visibility throughout the year. Overall, it can be concluded generally that southern and eastern areas are drier and sunnier and eastern areas are likely to have clearer and more frequent visibility of wind farms located some distance offshore than the west of England. This reinforces the visibility data. North-facing coasts will experience views of wind farms highlighted by the sun most frequently.

9.56. Whilst haar (sea fret) is noted on the east coast of the UK north of the Wash, no observations about fog have been included in the data. Other variables that help decipher the presence of fog including relative humidity and dew point (when compared to temperature) were also unobtainable for this study. If contained within a measured sample (at the coastal station) it would be recorded as restricting visibility and so forms part of the overall visibility dataset summarised in **Table 10.2**.However, if it occurred offshore this would not be included.

9.57. The team's experience of long views being regularly possible such as along the Severn Estuary (35km+) or across to Ireland from Wales remind us that visibility at long distances is regularly possible. The site visit in October 2019 to the east coast (discussed elsewhere in this report) also indicates that wind farms 33km offshore were visible to the human eye even in low contrast weather conditions (Great Gabbard and Dudgeon). However, as

discussed by Taylor (2004), visual impact is not solely based on visibility. Wind turbines also may be more or less visible depending on various other factors such as sun and cloud.

9.58. The influence of weather data, particularly relating to visibility, depends on what assessors, decision-makers and ultimately, society, considers is a significant and acceptable percentage of time that an offshore wind farm is likely to be visible or has a worst case significant adverse effect. Whilst the Culdrose coastal station to the west, away from current Round 4 bidding areas, has very limited or negligible frequency of visibility above 35 km, other coastal stations near relevant Round 4 areas record potential visibility above 35 km between 20-28% of days. 30km is the overall average threshold for visibility for around 30% days per year and is a distinct cut off point to the west of England but less so to the east of England and Wales. This data will be relevant to other potential areas for development coming forward in future.

9.59. Ultimately, the influence of marine visibility modifiers should be determined by examination of detailed data on a site by site basis. The UK coastline experiences a varied climate with variable visibility and weather that can change in minutes.

10. Review of Lighting Effects

10.1. This chapter briefly considers the requirements for lighting, discusses SVIAs assessments of the impact of lighting and reviews existing developments.

LIGHTING REQUIREMENTS

Navigational lighting

10.2. The requirements for navigational lighting are set out in the IALA Recommendation O-139 on 'The Marking of Man-Made Offshore Structures' Edition 2, December 2013. This notes that lights:

- Are located not less than 6 metres and not more than 30m above Highest Astronomical Tide (HAT);
- Have a minimum nominal range of 10 Nautical Miles (18.5km), taking background lighting into account;
- Are synchronized with a flash character according to Mo (U) W ≤15s;
- Have a vertical divergence of the projected beam such that the light will be visible from the immediate vicinity of the structure to the maximum luminous range of the light.

10.3. Specifically in relation to offshore wind farms, structures should be painted yellow all around from the level of HAT up to 15 metres. On a case-by-case assessment alternative marking, where applicable, may include horizontal yellow bands of not less than 2 metres in height and separation. The addition of retro-reflective material may be considered.

Aviation lighting

10.4. The Civil Aviation Authority (CAA) is the statutory body that sets out requirements for the lighting of en-route obstacles (i.e. those away from the vicinity of a licensed aerodrome) are set out in Article 222 of the UK Air Navigation Order (ANO) 2016.2.

10.5. This Article requires medium intensity (2000 candela) steady red aviation warning lights to be mounted as close as possible to the top of all structures at or above 150 metres above ground level (AGL).

10.6. In terms of requirement for lighting wind turbines generators in accordance with the ANO, the CAA considers the top of a wind turbine generator to be the maximum blade tip height. In terms of positioning of aviation obstruction lighting on wind turbine generators with a maximum height of 150m AGL or above onshore3, the CAA interprets 'as close as possible to the top of the obstacle' as the fitting of lights on the top of the supporting structure (the nacelle) rather than the blade tips.

10.7. Additionally, at least three (to provide 360 degree coverage) low-intensity Type B6 lights (32 candela) lights should be provided at an intermediate level of half the nacelle height.

10.8. CAA policy CAP 764, 2016, also requires some downward spillage of light. The article also allows for the CAA to permit that only turbines on the periphery of any wind farm need to be equipped with aviation warning lighting. Such lighting, where achievable, shall be spaced at longitudinal intervals not exceeding 900m.

10.9. The need for lighting within a wind farm is typically decided during the consultation stage of a planning application, based on views from the CAA, Ministry of Defence (MOD) and local aerodromes. Turbines below 150m are not routinely lit, but where lighting is required, wind farm developers usually seek to agree on the use of Infra-Red lighting in the interests of public amenity, this being barely perceptible to the human eye.

DTI SVIA guidance (2005)

10.10. The guidance only considers marine navigational lighting (6.3.4) stating that locating the development as far away from the coastline as possible will be the best method of mitigating the effects with the curvature of the Earth eventually obscuring lights. When viewed from just AOD, lights located on turbine towers 15m AOD would not be visible beyond 20km (Table 4 p73). In any case, the guidance indicates that navigation lighting at night is considered very much a secondary visual effect and should be dealt with as such in the SVIA. If the visual impact of an offshore wind farm is not significant during the day then it is considered very unlikely that it will be unacceptable at night (p80). The guidance does not consider aviation lighting.

EXAMPLES OF IMPACT ASSESSMENT FROM RECENT OFFSHORE WIND FARM SVIAS

10.11. A selection of some more recent offshore wind farms (2018/2019) have been reviewed in terms of their approach to the effects of lighting.

Inch Cape

10.12. The assessment has assumed a worst case scenario of 40 turbines up to 291m to blade tip height and clear visibility. All peripheral turbines were assumed to be lit with 2000 candela aviation lighting at nacelle level. Infra-red lighting does not appear to be considered as part of the SVIA.

10.13. Significant night time effects were predicted from the aviation lighting seen in addition to either the other wind farm lit turbines, based on interpolation from the four viewpoints assessed in the same seascape character areas as those for which significant day time effects were predicted. Additionally, localised significant night time effects were predicted. All were at distances of less than 30km from the nearest peripheral lit Inch Cape wind turbine. It was noted that the distances at which navigational and aviation lighting is predicted to be visible, vary depending on the atmospheric conditions.

Moray Offshore Wind farm (West)

10.14. A night time visual assessment was carried out at four viewpoints (SVIA p134). Effects were noted as follows:

- Viewpoint 3 (32km): The red turbine lights on the hubs of the perimeter turbines of the Development would be visible in the view. Although the lighting introduces lights into a section of dark seascape, the lights were not considered to be obtrusive and due to their relatively low position on the distant skyline, do not impede the view of the night sky. The magnitude of change was considered *low*.
- Viewpoint 9a (24.8km): The red turbine lights would be substantially diminished due to the distance of the Development offshore. The magnitude of change was considered *medium*.
- Viewpoint 12 (32.8 km): The lighting would be seen as an extension of the Beatrice offshore wind farm and in front of the lighting on the hubs of the Beatrice demonstrator turbines and oil platforms further offshore covering a wider proportion of the skyline. The magnitude of change was considered *medium*. (It should be noted that Beatrice demonstrator is due to be decommissioned imminently).
- Viewpoint 16 (31.7 km): The red turbine lights on the hubs of the perimeter turbines of the development would be visible in the view. The magnitude of change was considered *medium- low*.

Seagreen

10.15. The closest wind turbines of the optimised Seagreen Project would be in excess of 30km from the nearest land-based receptors. The SVIA (Sept 2018) states that, as set out in the IALA standards, the wind turbine lighting will consist of flashing lights which will be visible to at least 5 (sic) nautical miles (approximately 9km) (SLVIA 13.423). Aviation lighting on the wind turbines and meteorological masts was likely to be red or infra-red and was considered to be unlikely to be visible from land-based receptors.

10.16. With regards to the SLVIA viewpoints, even allowing for the possibility of some lighting being discernible over extended distances, the magnitude of change was judged unlikely to ever be more than medium-low if viewed from a remote location with no adjacent development. When combined with the considered low sensitivity of these receptors at night time the effect was considered no more than minor and therefore not significant in SLVIA terms (SLVIA 13.426).

Walney extension

10.17. The night time lighting from aviation (73 turbines) and navigational (29 turbines) lighting was considered to be readily discernible only from the closest coastal viewpoint-around 20km. (Other viewpoints ranged upto 39km away from the nearest turbines.) The lit development would be seen in the context of much closer wind farms and the effect was not considered significant (SVIA 19.9.3.10).

Summary

10.18. The above SVIA conclusions vary from expectations that effects would not be greater than 20km to assessments which considered effects at 33km could have medium magnitude of effect.

SITE VISITS

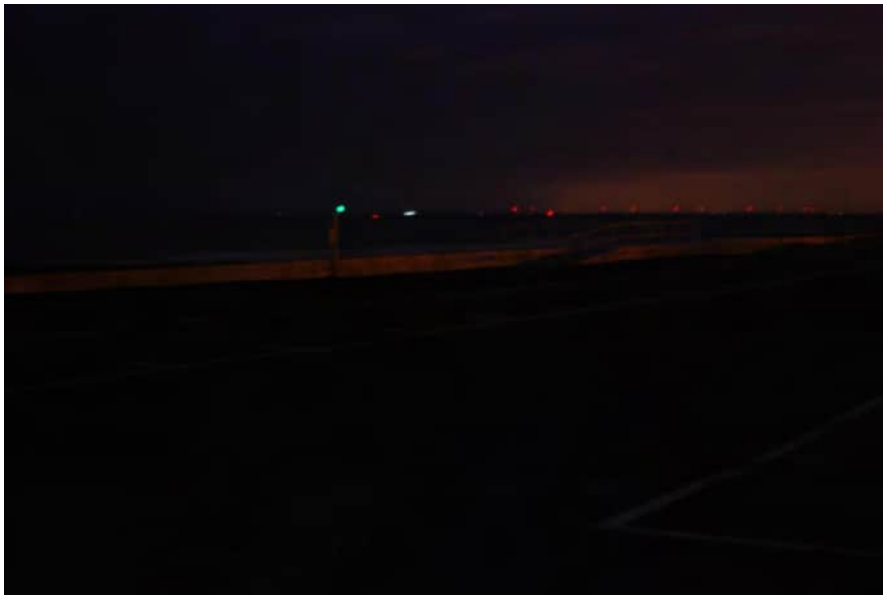
10.19. Site visits to assess existing wind farms, including night time assessments, have been carried out over a number of years- 2008, 2016 and 2019.

North Wales Coast: 2008 review

10.20. The North Wales coast was visited over a period of two days in December 2008 (see **Appendix H**). At night, the marine navigational lighting was only just perceptible at 10km but not at 21km and could be confused for other lighting such as navigation buoys and vessels.

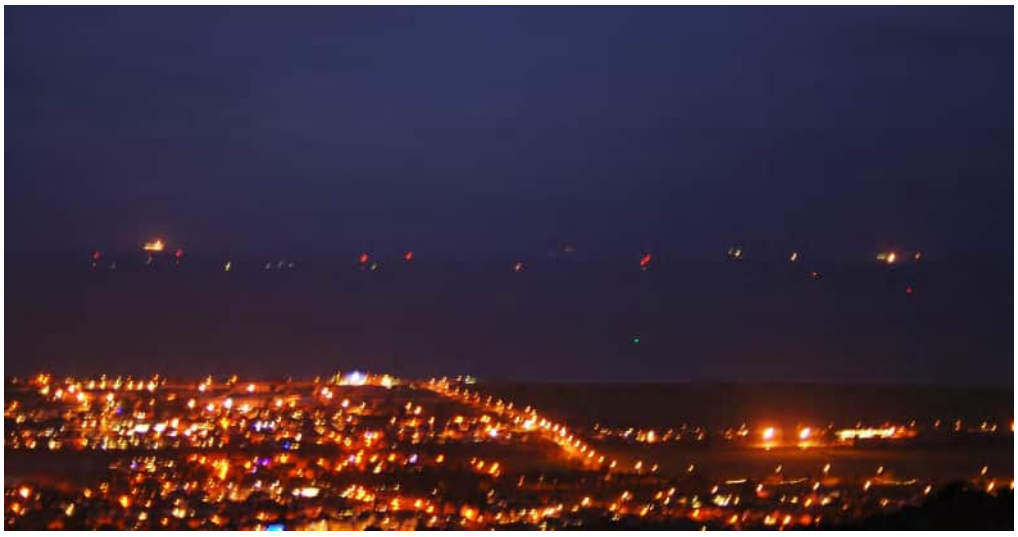
10.21. The red aviation lighting was significantly more noticeable and could be seen for long distances even in moderate visibility conditions. The furthest observed was Burbo Bank at a distance of 21km. Its sporadic flashing resulted in a restless image and appeared to ‘industrialise’ the seascape. It was considered that the lighting was likely to be more visible in a variety of weather conditions than the turbines in daylight based on several observations. **Figure 10.1** shows a photograph of lights of Burbo Bank from 21km.

Figure 10.1 Burbo Bank at night from 20km (Prestatyn)



10.22. North Hoyle wind farm's six red aviation lights appeared to flash in a gentler and less sporadic fashion than Burbo Bank when observed at a distance of 7.5km and 10km. It is assumed that this was a function of the blades passing in front of the lights although this cannot be confirmed. Due to the lights' high location on top of the turbine hubs they could not be mistaken for any other sort of marine lighting. As the North Hoyle lights were well spaced and less numerous than the turbines their visual impact was considered less than the turbines viewed in daylight in clear visibility conditions. The 54m high Douglas Oil and Gas platform at around 24km was visible on the horizon. This is shown in **Figure 10.2** to left of, and behind the wind farm.

Figure 10.2 North Hoyle at night from 10km (above Prestatyn)



10.23. Overall, it was considered that lighting was not a major issue in the North East Wales seascape where there is already a significant amount of lighting such as from oil rigs such as the Douglas rig as well as the onshore lighting such as Prestatyn above. However, the Burbo Bank apparently flashing aviation lighting was a cause for concern. It is considered that in more remote, wild seascapes with limited or no other marine lighting that the

aviation lighting could be a significantly 'industrialising' influence even at long distances offshore.

North Wales Coast: 2016 review

10.24. This assessment considered the Gwynt y Môr Round 2 wind farm which had been constructed since the 2008/9 study, along with the other constructed developments. The overall review is included in **Appendix H**. To get a sense of the effect of lighting, one viewpoint was visited at night in January 2016- Llandudno promenade, War Memorial.

10.25. The impression gained from the site visit was that navigational lighting on each turbine was highly apparent at at least a distance of 16km in the case of Gwynt y Môr. Rhyl Flats was more apparent at 11km. The red aviation lighting was brighter but less numerous as it lay on the edges of arrays and could be seen for long distances in good visibility conditions e.g. Gwynt y Môr from 16-23km. The actual turbines structures themselves could not be seen. Therefore, at night, Gwynt y Môr and Rhyl Flats appeared as if they were another coastline with a large industrial installation with tall structures. This effect was considered to be significantly adverse at a distance of 16km.

East of England Coast: 2019 review

10.26. The area was visited on two days in late October 2019 primarily to assess wind farms during the day (see **Appendix I**). Overall, the visibility ranged from poor through to good and very good visibility. However, a photograph from one viewpoint, from a building in street behind Aldeburgh seafront, was taken at night.

10.27. In this location, the weather cleared sufficiently to deliver very good weather conditions. Greater Gabbard/Galloper wind farm was 33km offshore.Navigation lighting on each turbine was not visible but some flashing red aviation lighting was just visible on the horizon. As an isolated group on the horizon this was not a significant effect in the visibility conditions. The photograph below in **Figure 10.3** picks up the central most light as a very small red dot near the centre of the image. As an image it understates what could be seen by the eye which picked up the flashing lights.

Figure 10.3 Greater Gabbard/Galloper wind farms at night from 33km

SUMMARY AND CONCLUSIONS

10.28. DTI guidance (2005) indicates that marine navigation lighting is a secondary impact and is very unlikely to be greater than the visual effects of a wind farm during the day.

10.29. Marine navigational lighting has an intensity which is expected to be visible for up to 18.5km (10 nautical miles) and is located at a level at which it is unlikely to be visible over longer distances due to the curvature of the Earth. It is therefore not considered to be a significant factor in determining buffer distances.

10.30. Aviation lighting is red, more intense, and located on the turbine nacelle. Due to the action of the turbine blades passing in front of the lights they appear to flash when viewed from upwind. Turbine lighting is visible over long distances, with over 30km recorded. However, effects tend to be more important at closer distances, with Gwynt y Môr 16-23km being an example. The spread of turbines across the horizon is also a factor. If a wind farm is a well contained cluster, effects are less. If the development covers the majority, or all of the horizon, effects are likely to be much greater. It may not be a significant factor where there is already marine lighting, particularly of an industrial nature such as oil rigs and numerous large vessels. However, in wild and remote seascapes and areas adjacent to certain designated landscapes where tranquillity is a special quality, it may be considered a relevant contributory factor in the siting of offshore wind farms. Cumulative effects are considered in the next chapter.

11. Consideration of cumulative effects

11.1. More than one offshore wind farm seen together will give rise to cumulative seascape and visual effects. Information from SVIAs is analysed with indicative buffers set out. However, the limitations of this approach are also discussed. The cumulative extent of skyline covered and the spacing between developments is explored and the extent to which this is should influence consideration of visual buffers is discussed.

Definitions and approaches

11.2. There are a number of definitions of cumulative effects. GLVIA3 says that it is not appropriate to prescribe the approach since issues related to cumulative effects depend on the specific characteristics of both the development proposal and the location. However, it lists different types of effect including extension of existing developments, additional development intensifying effects and incremental change as a result of successive individual developments.

11.3. SNH guidance (2012) relating to onshore wind farms defines cumulative impacts as:

'*the additional changes caused by a proposed development in conjunction with other similar developments or as the combined effect of a set of developments, taken together.*' (Paragraph 7).

11.4. Whilst many SVIAs concentrate on the additional effects of a given development, at a strategic level, it is the combined effect of a set of developments that is important, as this is what the viewer will experience. The guidance states that strategic planning should determine where the most suitable locations for development are and determine the thresholds of acceptable change (SNH, 2012, Paragraph 18).

11.5. The DTI (2005) report provides guidance on the process of cumulative SVIA, mainly based on previous GLVIA and SNH guidance, but is still relevant. It states that:

'when assessing significance of cumulative effects, consideration should be given to whether the proposed wind farm crosses the threshold of acceptability for the total number of wind farms in a seascape'.

11.6. It also recognises that there is no existing methodology for identifying when a seascape has reached its limit of capacity and therefore developers should be referring back to any strategic policies or locational guidance documents which identify the landscape objectives and policies for the area.

11.7. A report relating to the impact of onshore cumulative assessments, Entec (2008), concludes on issues particularly relevant to offshore wind developments, in particular, the potential development of the wind farm landscape. The report suggests that providing there is sufficient space or undeveloped skyline between each development or the overlapping of several schemes is not too dense; the developments would appear as a series of wind farms within the landscape and therefore does not become the dominant or defining characteristic of the landscape.

11.8. The report also concludes that where the wind farm element is the dominant and defining characteristic of the landscape i.e. a wind farm landscape, this could influence the quality of the landscape. However, this form of scenario is not deemed unacceptable if this is part of the wider planning system that has already taken account of the value and capacity of that particular landscape resource.

11.9. The approach of defining acceptable wind farm objectives for different landscapes has subsequently been applied in many parts of the UK. The objectives range from 'landscapes with no wind energy development' through to 'wind farm landscapes'.

11.10. Natural England's approach to landscape sensitivity assessment, June 2019,states that landscape capacity is taken as the amount of development or change which a particular landscape and the associated visual resource is able to accommodate without undue negative effects on its character and qualities. However, this concept is considered in the Approach to be possibly too simplistic and other non-landscape factors which influence capacity are mentioned. As such, unlike Topic Paper 6 which it supersedes, the document does not address this further. The way in which forthcoming complementary guidance on seascape sensitivity from MMO tackles cumulative effects is likely to be more relevant than Natural England guidance.

11.11. For offshore wind, wind farm seascapes have not been defined, although seas off parts of the east coast and north Wales could be construed as such. Their capacity for further development, and what form that development should take is an issue. For example, the NRW 2019 study indicates that any extension to the north east Wales arrays should be further offshore, rather than along the coast, mainly due to potential effects on Snowdonia National Park and the Isle of Anglesey AONB. In addition, lateral extension would cover large proportions of the horizon which could contribute substantially to combined cumulative effects on some receptors.

11.12. Equally, parts of the western seaboard could be defined as seascapes currently with no wind energy development. The desirability of this remaining the case (in seascape terms) will be based on consideration of the qualities and sensitivity of the seascape, and intervisibility with sensitive seascape and visual receptors. The only nationally consistent information available to this study which contributes to this is on designations and the NRW 2019 study which applies only to Welsh waters.

Analysis of SVIAs

11.13. It is recognised that many SVIAs concentrate on assessing the additional effects of a given development rather than the combined effect of all developments. This makes the data abstracted from them less helpful in a strategic assessment.

11.14. 14 out of 27 SVIAs have measurable cumulative effects assessments from viewpoints. The assessments are located in **Appendix D** and are brought together in **Table 11.2**. The summary derived from this is set out in **Table 11.1**.

Table 11.1 Summary of SVIA cumulative visual effects of offshore wind farms

Offshore wind farm SVIAs	Cumulative low magnitude of effect ***		Cumulative medium magnitude of effect	
Heights of turbine to blade tip (m)	Average Distance km	Maximum Distance km	Average Distance km	Maximum Distance km
107-145	**24.0**	24.7	**9.2**	10.8
150-175	**21.6**	27.7	**14.9**	27.7
176-223	**24.5**	26.4	**24.0**	27.1
250-300	**36.1**	41.8	**36.1**	39.4

.

Table 11.2 Analysis of Offshore Wind Farms: Cumulative Visual Impact Assessment

Scheme	Round	Status	Turbine capacity in MW*	Max. turbine height to blade tip (m)**	Max no. of turbines**	Maximum wind farm capacity (MW)**	Nearest coast km	Existing wind farms in baseline?	No. of SVIA viewpoints for cum. effect	Cumulative low magnitude of effect***		Cumulative medium magnitude of effect	
										Average Distance km	Maximum Distance km	Average Distance km	Maximum Distance km
North Hoyle	1	Implemented	2	107	30	60	7.5	n	12	18.3	20.4	9.2	10.8
Gunfleet Sands 2	1	Implemented	3.6	128	22	173	8.5	y					
Kentish Flats	1	Implemented	3	140	30	90	8	n	1	30.9	30.9		
Gwynt y Môr	2	Implemented	3.6	140	160	576	18	y					
Docking Shoal	2	Withdrawn	3-6	145	177	540	14	y	3	22.9	22.9		
									Averages	**24.0**	**24.7**	**9.2**	**10.8**
Thanet Sands	2	Implemented	3	150 (115)	100	300	11	n	4	21.6	27.7	14.9	27.7
West of Duddon Sands	2	Implemented	3.6	150	139	389	14	y					
Gabbard	2	Implemented	3.6	170 (131)	141	504	23	n					
Sheringham Shoal	2	Implemented	3.6	172 (135)	88	317	17	n					
Westermost Rough A	2	Implemented	6	172 (177)	110	210	8	n					
London Array	2	Implemented	3.6	175 (147)	271	630	21	y					
									Averages	**21.6**	**27.7**	**14.9**	**27.7**
Kincardine	SFD	Construction	7 (8.4)	176	7	50	15	n					
Hywind	Demo	Implemented	6	178	5	30	23	n					
Atlantic Array	3	Withdrawn	5	180	278	1390	14	n					
Neart na Gaoithe	Sco 1	Consented	8-10	197 (208)	128	448	15	y					
Beatrice Offshore	Sco 1	Construction	7	198	142	588	22	n	14	24.8	33.1	21.2	25.6
Navitus Bay	3	Refused	8	200	121	970	14	n				28.0	28.2
Walney 1	2	Implemented	3.6	202 (137)	93	186	15	y	17	26.5	27.6	27.6	35.2
Rampion	3	Construction	3.6-7 (3.45)	210 (140)	175	400	13	n	3	24.1	24.1	22.8	24.0
Walney Extn		Implemented	8.25	222	207	659	19	y	17	20.8	20.8	29.5	31.3
Burbo Bank Etxn		Implemented	3.6	223 (187)	36	254	7	y	5	26.4	26.4	14.8	18.4
									Averages	**24.5**	**26.4**	**24.0**	**27.1**
Thanet Extn		Submitted	8-12	250	34	340	8	y	4	18.5	22.8		
Seagreen	3	Consented	12.5	280	120	1500	27	y					
Moray East	3	Construction	9.5	280	137	1116	22	n	22	37.6	46.0	33.7	36.0
Moray West	3	Consented	10-12	285	85	1116	22	y	25	40.5	50.0	25.6	28.0
Inch Cape	Sco 1	Consented	9.5	291	72	1000	15	y					
E Anglia ONE north	3	Submitted	12-19	300	53	800	36	n	17	41.8	42.7	49.9	55.8
E Anglia TWO	3	Submitted	12-19	300	60	900	31	n	22	42.3	47.7	35.3	37.6
									Averages	**36.1**	**41.8**	**36.1**	**39.4**

Notes
Where wind farm has no figures, no cumulative assessment was carried out or the assessment is not available (e.g. Gwynt y Môr)
* Shows as assessed in SVIA (implemented capacity in brackets)
** in SVIA (as implemented in brackets)
*** Low category includes variations on low and medium/low effects

11.15. The findings indicate an inconsistent pattern of effects when compared to the effects of wind farms assessed predominantly on their own.

11.16. The distance at which average cumulative low magnitude of effect of 107-145m high turbine arrays at 24km is greater than the individual arrays magnitude of effect, as might be expected. However, the distance is lower for the other three size ranges ranging from 21.6km for 150-175m turbines to 36.1km for 250-300m turbine arrays.

11.17. The distance at which average cumulative medium magnitude of effect of 107-145m and 150-175m high turbine arrays at 9.2 km and 14.9 km respectively is lower than the individual arrays magnitude of effect. However, the distance is higher for the upper two size ranges ranging from 24km for 176-223m turbines to 36.1km for 250-300m turbine arrays. The latter is the same as the average cumulative low magnitude of effect.

11.18. Overall, these findings should be considered with caution. As discussed earlier, the reason for the lower values and variation is likely to be that many of the cumulative effects assessed are the additional effects that proposals may have as part of overall cumulative effects rather than the combined/overall cumulative effects themselves.

Wireline analysis

11.19. The 2009 White Consultants report analysed a number of scenarios. The first was for a 4.5GW wind farm 24km from the coast consisting of 5 MW turbines. The wind farm was split into 9 clusters separated by 5km of clear water. It was considered that the magnitude of effect would be moderate due to the extent of the horizon covered.

11.20. A second scenario considered the above wind farm with a Round 1 wind farm of 30 3.6MW turbines 137m high to blade tip in one cluster a minimum of 7km offshore and a Round 2 wind farm of 98 5MW turbines 175m high to blade tip 13km offshore. Overall, it was considered that that there would be a large change due to the extent of horizon covered, the size of the nearer clusters and the visual confusion between the wind farm clusters through overlapping of turbines.

11.21. For the 2016 study, four scenarios were explored using different sizes of turbines, the concentrating on the potential effects of larger turbines i.e. 10MW and 15MW. All scenarios combined wind farms at 7km, 30km and 24km. The findings are shown in **Table 11.3.**

Table 11.3 - View of potential magnitude of effects for cumulative scenarios including 10MW/220m and 15MW/300m turbines viewed at 22m AOD

Cumulative Wireline Scenarios	Scale of effect
10MW Scenario- three wind farms at 7km+13km+24km	Large and very large
15MW Scenario- three wind farms at 7km+13km+24km	Large/very large
Mixed Scenario- three wind farms with different turbine sizes (in brackets)- 7km (3.6MW) + 13km (15MW) + 24km (15MW)	Large and very large
Mixed Scenario- three wind farms with different turbine sizes (in brackets)- 7km(3.6MW) + 13km(10MW) + 24km (15MW)	Large and very large

11.22. For this study, three scenarios have been explored using different sizes of turbines, the concentrating on the potential effects of larger turbines 350m high i.e. 20MW, in conjunction with 220m/10MW and 137m/3.6MW turbine arrays. All scenarios combined wind farms at 7km, 13km, 24km and 35km. The findings are shown in **Table 11.4.**

Table 11.4 – View of potential magnitude of effects for cumulative scenarios including 20MW/350m,10MW/220m and 3.6MW/137m turbines viewed at 22m AOD

Cumulative Wireframe Scenarios	Scale of effect
Cumulative scenarios	
20MW/350m (24km), 10MW/220m (13km) and 3.6MW/137m (7km) turbine arrays	Large and very large
20MW/350m (35km), 10MW/220m (13km) and 3.6MW/137m (7km) turbine arrays	Moderate and very large
20MW/350m (at 24km and 13km) and 3.6MW/137m (7km) turbine arrays	Large and very large

11.23. All the wirelines reflect a worst case visibility situation depending on excellent visibility of all arrays and good light. In these conditions it is considered that that there would be adverse change due to the extent of horizon covered, the size of the nearer clusters and a very confused and unbalanced composition with turbines becoming the dominant seascape characteristic. Whereas the 2016 study considered the effect to be large to very large, these scenarios were considered to range from moderate to very large. The scenario with the greatest impact was considered to be where 350m high turbines were used in two arrays, 13km and 24km offshore, in conjunction with 137m turbines 7km from shore. The least impact is where the furthest array of 350m turbines is 35km offshore. More information on the method, analyses and scenarios is set out in Appendices E1, E5 and E6.

Summary

11.24. Most of the SVIAs analysed concentrate on the additional cumulative effects of a given development, rather than the combined cumulative effect, and so the findings need to be treated with caution. Nevertheless there is an increase in the cumulative effect of arrays in line with increasing size of turbines. For example, larger turbines 250-300m high have both medium and low average cumulative effects around 36km from shore.

11.25. In terms of wireline analysis this also needs to be treated with caution as it illustrates a worst case scenario with excellent visibility covering all assessed arrays which is likely to be a rare occurrence. Of multiple wind farms from 7km to 35km from shore, it is considered that that there would be a moderate to very large change due to the extent of horizon covered, the size of the nearer clusters and the visual confusion between the wind farm clusters through overlapping of turbines and different sizes of turbines. The worst scenario is considered to one where large turbines 350m high are in arrays 13km as well as 24km offshore. The best scenario is where the furthest array of 350m turbines is 35km offshore.

11.26. It is the combined cumulative effect of a set of developments that is important at a strategic level to understanding the overall visual effects on people and associated effects on seascape character.

11.27. Seascape sensitivity studies should help inform the most suitable locations for development and explore the thresholds of acceptable change taking combined

cumulative impact into account. This would be helpful at a strategic level now that MMO guidance has been issued. Studies should be based on further consideration of marine character areas or similar units, proximity to statutory and key designations and related intervisibility. This is outwith the scope of this report.

11.28. Within areas considered to be suitable for offshore wind farms, array design should be a key consideration to optimise the pattern of development. This should include the relationship between arrays including the distance between them, open gaps to the horizon (or far offshore arrays) and the compatibility of the arrays' size of turbines and arrangement. This is also outwith the scope of this report.

12. Findings of site visits

Introduction

12.1. In order to assess the actual visibility and visual effects of implemented offshore wind farms a series of visits have been made to a number of coastal locations. This also has allowed comparison with the relevant SVIA findings for specific viewpoints and review of photomontages/visualisations where these have been available.

12.2. To inform the OESEA 2016 study a site visit was made to the North Wales coast in March 2016 to assess the effects of Gwynt y Môr, Rhyl Flats and North Hoyle wind farms.

12.3. For this study, the east of England coast was visited in October 2019. The main objective here was to look at the visibility of wind turbines further offshore and the juxtaposition with nearer arrays. Two main groups were assessed:

- Off the north Norfolk coast: Race Bank, Sheringham Shoal and Dudgeon wind farms
- Off the Suffolk and Essex coast: Greater Gabbard/Galloper, London Array, East Anglia 1 and Gunfleet arrays.

12.4. In addition, the Scottish coast between Aberdeen and Peterhead was visited in July 2019 to assess EOWDC and Hywind wind farms.

Method

12.5. The method for the 2016 and 2019 assessments are explained in the **Appendices H and I.** The assessment structure differs slightly inasmuch as the former in North Wales is based on specific viewpoints viewing three wind farms from different directions and distances. The 2019 analysis, covering three different main locations and sets of wind farms on the East Coast, is structured on wind farms themselves, with associated viewpoints. The observations made are structured in a similar way.

12.6. Photos were taken as an aide memoire but written observations were based on what was seen on site. The digital SLR photographs make the wind farm look smaller than when viewed in real life.

12.7. Visibility definitions for weather are as follows based on Met Office weather records:

Table 12.1 Visibility definitions

Description	Range
Unknown	-
Very poor	Less than 1 km
Poor	Between 1-4 km
Moderate	Between 4-10 km
Good	Between 10-20 km
Very good	Between 20-40 km
Excellent	More than 40 km

North Wales observations and conclusions

12.8. For North Wales, a series of observations were made (see **Appendix H**).

12.9. As the study period was in the winter months starting in January 2016 it was difficult to find days when the visibility is sufficient to assess the effects of Gwynt y Môr and the other wind farms. This reinforces the statistics of the

relatively limited number of days that wind farms further offshore are easily visible and/or may have a significant visual impact.

12.10. Different weather conditions had significant effects on the visibility of turbines on the site visits. When sunlight was on turbines, especially when behind the viewer, they were highly visible from long distances e.g. Gwynt y Môr from 16-28km. Conversely, in overcast and hazy conditions turbines at 8km were difficult to see and could be barely perceptible at around 14km. It was observed that there were variations across the wind farms in variable conditions with some turbines in shade beneath cloud, while others were in sun. Therefore, the wind farm turbines did not appear to be as a strong coherent group in these variable conditions. The closer the wind farm, the less this effect changed the perception of the wind farm e.g. 8-10km compared to 13-20km.

12.11. From the higher viewpoints, the wind farms looked more coherent as the whole of the wind farm and their layout could be seen clearly against the darker sea area. The difference in scale and detail between different wind farms could also be compared e.g. Gwynt y Môr and Rhyl Flats wind farms from Great Orme (see **Figure 12.1**).

Figure 12.1 View of Gwynt y Môr (and part of Rhyl Flats) from Great Orme

12.12. From the lower viewpoints, the wind farms looked further away on the horizon, although the turbines were still prominent when sunlit but were often seen against a lighter sky which reduced their effect. The layout of the wind farm was less easy to comprehend than when viewed from higher viewpoints.

12.13. The Gwynt y Môr photomontages showed a different layout to that that was implemented. They also appeared to make turbines smaller than they appeared in real life even though they were for 5MW turbines and those implemented were 3.6MW turbines. Where tested, the photomontage designed to illustrate a view from a viewing distance of around 400mm had to be held at about 200mm to achieve a similar effect to that seen on site.

12.14. The three Round 1 wind farms are spaced such that they are well separated and sit within an overall seascape as prominent elements but without dominating it apart from adjacent short stretches of coast. While the North Hoyle layout is organised and coherent allowing views to the horizon, there is blade overlapping. It is very clear that the grid is rectilinear and at right angles to the

coast. This gives it a semi-industrial appearance. The Burbo Bank layout appears as a well separated 'drift' of turbines when viewed from along the coast in Wales. The Rhyl Flats wind farm is the least successful with rows parallel, and centrally placed, to the concave part of the coast. This makes the layout appear over-regimented and forming the focus of many views. The juxtaposition of the three different layouts is disruptive to the composition of the seascape.

12.15. The Round 2 Gwynt y Môr wind farm is larger, extending further along the coast and is further out to sea than the Round 1 wind farms. It is therefore visible in good visibility at all the viewpoints. The distance of the wind farm away from the coast and its spread means that much of the array did not appear to be in regimented rows for the most part, although this was apparent in places. In many cases, though, there was overlapping between the turbines of the various wind farms which led to a confused image in clear conditions.

12.16. At night, navigational lighting on each turbine was highly apparent at at least a distance of 16km in the case of Gwynt y Môr. Rhyl Flats was more apparent at 11km. The red aviation lighting was brighter but less numerous as it lies on the edges of arrays and could be seen for long distances in good visibility conditions e.g. Gwynt y Môr from 16-23km. The actual turbines structures themselves could not be seen. Therefore, at night, Gwynt y Môr and Rhyl Flats look like another coastline with a large industrial installation with tall structures. This effect was significantly adverse at a distance of 16km.

12.17. The four existing wind farms off the Welsh Coast combined with the Burbo Bank wind farm to the east create a wind farm seascape with wind turbines as the dominant element in views out to sea along the coast in many places between the Great Orme and the Point of Ayr. This does not mean that offshore wind farm development is inappropriate for the majority of this stretch of coastline due to its particular characteristics. However, it raises the issue of the suitability of this approach in other seascapes and the capacity of this seascape to absorb more or larger development. The spread of Gwynt y Môr and Rhyl Flats combined taking the majority of the horizon in the framed view from Llandudno promenade is not a desirable precedent. The Burbo Bank extension with significantly larger turbines relatively close inshore (implemented subsequent to the site visit) has exacerbated the effect on the eastern stretch of the coast. This will be an issue to consider in the likely proposed extent of the Gwynt y Môr extension.

English east coast observations and conclusions

12.18. For the East coast, a series of further observations were made (see **Appendix I**). Many observations reinforced the findings, such as the effect of distance on atmospheric modifiers, the variation of visibility across an entire array and increased coherence of turbine layouts seen from higher viewpoints.

12.19. The assessment during late October with visibility conditions only good and very good at best and little sun meant that the wind farms were not viewed in the worst case situation. Different weather conditions had significant effects on the visibility of turbines on the site visits. When sunlight was on individual turbines, especially when behind the viewer, they were visible from long distances e.g. 33km at Dudgeon. Conversely, in overcast and misty conditions turbines at 17km were difficult to see. It was observed that there were variations across the wind farms in variable conditions with some turbines in shade beneath or within cloud, while others were in very limited sun. Therefore, the wind farm turbines did not appear to be as a strong coherent group in these variable conditions. The closer the wind farm, the less this effect changed the perception of the wind farm e.g. 9km and 17km compared to 24-33km.

12.20. Comparing the apparent size of turbines in two different arrays in the same view from Beeston Bump/Hill (63m AOD), those at Dudgeon (187m at 33km) appeared to be around two thirds the height of Sheringham Shoal (135m at 17km). Therefore, 300m turbines 33km offshore would appear to be of similar size to 135m turbines 17km offshore from this height of viewpoint. 350-400m turbines 33km offshore would be likely to appear larger. However, the turbines further away were observed to be less distinct and more likely to disappear from view in the weather and visibility conditions. Therefore, from observation, the effects of turbines further away would be tempered by atmospheric interference and the frequency of view, requiring very good or excellent visibility conditions. The latter factors therefore become increasingly important determinants of the significance of effects further offshore.

12.21. As in North Wales, the juxtaposition of close inshore and offshore wind farms is visually disruptive although it is clear that they are physically separated.

12.22. Combined cumulative effects were not addressed in the SVIAs for the intervisible Gunfleet Sands (I, II and III) and London Array so the overall effects of wind farms taken together have not been assessed.

12.23. Currently there is visual separation between wind farms on the north coast of Norfolk so they appear as separate coherent groups. This is a positive feature.

12.24. At night, in very good weather conditions, navigational lighting on each turbine was just visible on the horizon at 33km in the case of Greater Gabbard/Galloper. As an isolated group on the horizon this was not considered to be a significant effect.

Scottish east coast observations and conclusions

12.25. The brief site visit to the Scottish east coast to view demonstration and pilot projects reinforced some of the findings from the other site visits but also revealed other properties (see **Appendix I**).

12.26. EOWDC, with eleven 202m high turbines located close inshore, had very large effects on coastal receptors. The full detail and colour of the wind turbines and their yellow steel jacket bases were revealed. This is not an issue for turbines located over 24km offshore as the base would be below the horizon for observers at sea level. The size of the structures was demonstrated by the fact that they remained as large structures within the landscape rather than receding at a rate that might have been expected when travelling along the adjacent coastal road for a significant distance.

12.27. The five floating 178m high turbines of Hywind appeared as very small objects at around 26km. This may have been because they were viewed in conjunction with much closer port and industrial structures, they were not illuminated by sun, or because the size of the array was small. However, at this distance they did not appear to have a significant effect.

Summary and conclusions

12.28. The key points arising from the site visits are discussed below.

12.29. In very good visibility and with sun on turbines, especially behind the viewer, 187m high turbines can be picked out at distances of 33km, but this size of turbine appears very small.

12.30. Even if in shadow with a light horizon behind, 187m high turbines at 33km can just be discerned if searched for.

12.31. Atmospheric interference such as haze, mist and cloud and sunless conditions can obscure or reduce the contrast between light grey turbines and their backcloth meaning that they can be difficult to discern from 8 to 33km.

12.32. When viewed at sea level, the top of the tower, hub and blades of 131m high turbines are still visible at 29km. Therefore, the effect of curvature of the earth on reducing effects, particularly on larger turbines, should not be overstated.

12.33. At lower levels, wind farm layouts can appear less coherent than when viewed from higher viewpoints (e.g. 60m AOD+). Therefore, wind farms do not necessarily have less effect on receptors on low lying coasts themselves (although effects further inland, if flat, are likely to be negligible).

12.34. Wind farm seascapes with overlapping views of arrays have been created off the North Wales coast east of the Great Orme, are nearing this condition in the Thames estuary and may reach this state further up the east coast if extensions reduce or remove visual separation of arrays.

12.35. At night, aviation warning lighting can be significant at 16+km especially with a large spread across the horizon, but not at 33km with a limited spread. Overall, it appears to be less important as a factor than daytime views of the whole turbine.

12.36. In relation to SVIAs, some underestimate effects whilst others appear to be accurate in terms of worst case. Most do not address combined cumulative effects and so the 'cumulative effects' assessments underestimate or minimise the actual overall effects of implemented wind farms on receptors. It is considered that cumulative impact assessments should cover the *combined* effect of all existing and consented wind farms along with the proposal as well as an assessment of the *additional* effects of the proposal above the baseline. This is a particular consideration for extensions. There may also be a situation where other wind farms in the consenting process have to be taken into account as a further scenario. However, this should not substitute for both the *combined* and *additional* cumulative assessments.

13. Summary and findings

13.1. The objective of the study is to provide strategic guidance to developers and regulators on the likely limits of significant effect on seascape in English waters from further offshore wind development, including potential cumulative effects with existing operational, consented or in planning developments.

13.2. The study builds on the findings of previous OESEA background papers in 2009 and 2016.

13.3. The published OESEA3 Environmental Report (March 2016) stated as part of Recommendation 1 that developments (individually or cumulatively) should aim to avoid causing significant detriment to amenity and well-being as a consequence of deterioration in valued attributes such as landscape, tranquillity and other factors. In the discussion on visual buffers (derived from White Consultants (2016)) the report states:

'Further conclusions of the work were that for high value and high sensitivity coastlines, a distance of 30km from the coast (the limit of visual acuity) could be attributable to developments for a range of sizes (e.g. 3.6MW to 15MW), whereas distances for areas of medium value and sensitivity may be in the order of 13km (3.6MW turbines), 20km (4-8MW turbines) or 20+km (10-15MW turbines).' (p291).

13.4. This report seeks to update consideration of these distances. It considers the latest UK policies, guidance and baseline seascape information, and the latest offshore wind farms SVIAs and PEIRs. It also considers the potential effects of future larger wind turbine sizes through preparation of wireline scenarios and assessment. The study goes on to explore the influence of marine visibility modifiers e.g. haze and other weather conditions, considers the influence of lighting on potential effects, reviews other nations' approaches to buffers/siting wind farms offshore, evaluates cumulative effects of existing and proposed developments and summarises the findings of site visits to assess implemented offshore wind farms. It brings together these considerations to come to overall conclusions on the likely limits of significant visual effects contributing to seascape in this chapter.

13.5. The focus of the previous OESEA background studies has been on visual effects on coastal receptors and potential visual buffers, particularly associated with national landscape designations of National Parks and AONBs. This study acknowledges that consideration of seascape character is also a factor as a comprehensive national baseline for this has now been completed. However, the current absence of sensitivity assessments to offshore wind development for the majority of the English seascape remains an issue. Wales now has such an assessment which uses visual buffers from national landscape designations as a significant component in deriving boundaries of units and attributing sensitivity. As such, the findings of this report should be helpful in assisting in deriving sensitivity to wind farms in English waters at a broad brush scale along with a range of other factors.

13.6. Our interpretation of the threshold of no significance is derived from a 'worst case' scenario in the DTI (2005) seascape and visual impact assessment guidance which states that moderate significance adverse effects could be judged as significant (although it is most likely they are not). Taking a precautionary approach our research defines the point where the visual effect of an offshore wind farm development changes from one of moderate adverse significance to minor-moderate significance. Different magnitudes of effect are acceptable depending on the sensitivities of seascape or receptors.

13.7. In practice it is difficult to be precise about buffer distances because effects change depending on the size of the wind farm, the potential influence of other wind farms, the sensitivity of the viewpoint and the viewer and prevailing visibility and weather conditions. Beyond any given threshold of 'no significance', wind farms are still likely to be visible in clear weather conditions.

13.8. In order to analyse a range of data we have separated the magnitude of effect of wind farms from the sensitivity of receptor. This is to understand the 'pure' visual effects of development at different distances.

13.9. The study is concerned with all potential future offshore wind farm development and is not limited to Round 4 zones.

13.10. The summaries for each report chapter are set out below followed by a section bringing the evidence together in tabular form.

Wind farm development since 2009

13.11. Since 2009 there has been a very substantial increase in the number of turbines consented and implemented. The majority have been in the North Sea with the larger schemes tend to be located long distances offshore. However, some smaller schemes with large turbines have been consented close to shore e.g. EOWDC demonstration project. The average size of wind farm has increased and the consented/operational turbines capacities now range from 3.6MW through to 12.5MW. Elsewhere, developers have opted to implement schemes with smaller turbines, although they have a consent option to use larger turbines.

13.12. The first floating turbine wind farm used for deep water is now operational in Scotland- Hywind. The implication is that deeper waters off England and Wales may also now be considered for future search areas. These would include seas off the western seaboard peninsulas as well as parts of the North Sea off the coast of north east England. However, in the immediate future, the Crown Estate have launched Offshore Wind Leasing Round 4 for new seabed rights in four bidding areas up to 60m water depth- Dogger Bank, Eastern Regions, the South East and Northern Wales and Irish Sea.

13.13. In the case studies, it has been found in the decision making process that great weight is put on the effects on nationally designated landscapes and their users. Where there is more than one sensitive designation affected, this can count against a proposal. The combination of National Park or AONB, coinciding with Heritage Coast and/or World Heritage sites, appears to be considered as particularly sensitive. Much depends on the relationship of the proposal with the designations, such as whether the views are directly offshore looking at the widest part of the array, or viewing the narrower side of the array along the coast. However, each case is looked at on its own merits, with comparison with other proposals treated with caution.

13.14. In determining the worst case scenario for assessment sometimes larger numbers of smaller turbines at closer spacings, and possibly with a greater spread, have been regarded as the worst case scenario compared to larger turbines at greater spacing, with a narrower spread.

Policy considerations

13.15. The Marine and Coastal Access Act 2009 introduced the marine planning system in the UK. The UK Marine Policy Statement sets out the overall framework. Seascape is a consideration and marine plan authorities should take into account existing character and quality, how highly it is valued and its capacity to accommodate change.

13.16. Two Marine Plans in England have been completed with the rest out to consultation. All associated national level seascape character assessments have been undertaken. These do not evaluate the sensitivity of seascapes and therefore cannot be factored into potential buffers at the SEA level.

13.17. The Welsh National Marine Plan has now been adopted. The Wales Act 2017 means that consent for wind farms below 350MW is devolved to Welsh Ministers but those above are a matter for the UK government. It is likely that the large-scale offshore developments will exceed the threshold.

13.18. National Policy Statements EN-1 and EN-3 address national infrastructure planning in relation to renewable energy including offshore wind farms with a capacity above 100MW in England and 350MW in Wales. Nationally designated landscapes are confirmed as having the highest status of protection and their statutory purposes should be taken into consideration. Outside nationally designated areas, local landscape designations should not be used in themselves to refuse consent. The 'Rochdale Envelope' is a pragmatic approach to define the maximum parameters of a wind farm and constituent turbines as part of the consenting process. It illustrates that a range of sizes and numbers of turbines can be consented, although the worst case scenario is assessed within SVIAs.

13.19. National Parks, AONBs, Heritage Coasts and landscape-scale World Heritage Sites are the key designations relevant to consideration of wider visual buffers.

13.20. Policies may change in the light of the Climate Emergency declared by the UK Parliament on 1 May 2019.

International perspective

13.21. European nations within the EU operate a system of SEA some of which consider visibility/visual effects on the coast. Earlier developments for each country have tended to be located closer to shore with larger arrays with larger turbines significantly further offshore, sometimes stacking beyond nearer existing arrays. Arrays further offshore are arranged more parallel to the coast as visual intrusion is considered less problematic.

13.22. Considering the most experienced countries, planners and developers in Germany have favoured a 30km minimum distance offshore to deter any refusals based on the visual and noise impacts (based on wind turbine sizes to date). Implemented schemes average 55km offshore and consented schemes average 52km offshore. Not only does this assist in planning consent, but it also prevents any conflicts with other nautical activities around the coastline. Denmark, as an early pioneer has a wide variety of schemes very close to shore and up to 40km. The trend in the Netherlands and Belgium appears to be to allocate areas around 22km from the coast, with newer development zones significantly further offshore (35-60km).

13.23. In the USA, only one offshore wind farm has been implemented but 13 commercial wind energy leases have now been issued by the Bureau of Ocean Energy Management (BOEM) who manage the process of assessing, selecting and leasing federal areas offshore. The National Park Service (NPS) are consulted to identify potentially sensitive visual settings. NPS guidance refers to research that suggests that an appropriate area of impact analysis based on turbine heights up to 152m would be 40km. Taller turbines might be visible for longer distances and could require a larger area of analysis.

13.24. Elsewhere, there is no clear indication of how the visual impacts influence decision making- in Asia there are many near shore wind farms but the quality of coastal landscape or designations nearby are not known.

Seascape and visual impact guidance

13.25. The publication 'Guidance on the assessment of the impact of offshore wind farms: seascape and visual impact report' (DTI 2005) remains as key guidance in assessing the effects of offshore wind farms. Its consideration of magnitude of change identifies quantifiable parameters which include distance, number and proportion of turbines visible, proportion of field of view and navigational lighting. Less quantifiable parameters include arrangement of turbines, background, aspect and weather and prominence of other built features in the view. The report omits consideration of aviation lighting although marine navigation lighting is included.

13.26. GLVIA3 (LI, 2013) provides general guidance on landscape and visual impact assessment. This considers the factors influencing sensitivity and magnitude of effect. The three main factors affecting visual magnitude of effect are defined as scale of effect, extent and duration but their relative weighting is not specifically discussed. Scale of effect and extent can overlap as factors and as offshore wind farms are long-term in duration, the overall magnitude of effect combining the three factors is often the same as the scale of effect on its own. For a study of this nature, it is sensible to take the precautionary approach and consider that this is the case.

13.27. NECR105 defines the approach to seascape character assessment in England and Wales. It is a very concise document which gives no detailed guidance. The marine character areas now completed for all the Marine plan areas are derived from this approach but do not include an evaluation of sensitivity and so have limited value for strategic level assessment although act as a baseline and inform more detailed assessments.

13.28. The Welsh seascape sensitivity study specifically considered buffers to offshore wind farms with wind turbines ranging from 107m up to 350m high to blade tip. It used analysis of SVIAs in a complementary manner to the OESEA background studies.

13.29. MMO have just published guidance on assessing seascape sensitivity (MMO (2019)). It is relevant to how sensitivity to offshore wind farms could be assessed at national and regional levels as well as for SVIAs.

SVIAs analysis

13.30. SVIAs for 28 wind farms from Rounds 1, 2, 3, STW and wind farm extensions have been analysed. The distances at which both low and medium magnitude of visual effect have been extracted for four ranges of turbine sizes.

13.31. Including all wind farms analysed, the range at which low (including medium/ low) magnitude of effect occurs is from an average 19.2km for turbines up to 145m height to blade tip to an average 38.6km for turbines up to 300m high. A low magnitude of effect may have a significant effect on a high or very high sensitivity receptor such as a National Park or AONB, especially if occurring in a number of related locations.

13.32. The range at which medium magnitude of effect occurs from an average 14km for turbines up to 145m height to blade tip to an average 27.5km for turbines up to 300m high. A medium magnitude of effect may have a significant effect on medium or medium to high sensitivity receptors.

13.33. The thresholds of effects derived from these analyses are lower than both the OESEA3 background report, 2016 and NRW, 2019 studies. This is likely to be due to the following combination of factors:

- This analysis includes judgements of medium-low in the range of low magnitudes of effects- this influences the thresholds of low effect in all turbine height ranges.
- There are a greater number of assessments informing the analysis of wind farms, including those with higher turbines, but also smaller demonstration wind farms like Kincardine and wind farm extensions are included.
- The grouping of different heights/sizes of turbines is slightly different between this analysis and OESEA3 background report, and so the two are not directly comparable. The latter groups turbines of 3-6MW together i.e. up to around 180m high.

Wireline analysis

13.34. Wirelines are used in this report to explore the potential visual effects of wind turbines 350m and 400m high to blade tip as these are not addressed in the SVIAs analysed. The ranges of size of array, heights of viewpoints (6m, 22m and 100m AOD) and distances of arrays offshore (13km, 18km, 24km, 35km and 44km) are considered to be representative of typical situations and wind farms in the UK which may have effects on coastal receptors.

13.35. For a sample 500MW wind farm, a small (or low) magnitude of effect was found beyond 24km for 137m high turbines and well beyond 35km for 350m or 400m high turbines. A low magnitude of effect may have a significant effect on a high or very high sensitivity receptor such as a National Park or AONB.

13.36. For the same sample 500MW wind farm, a medium magnitude of effect was found between 13-18km for 137m high turbines and around 35km for 350m or 400m high turbines. A medium magnitude of effects may have a significant effect on medium or medium to high sensitivity receptors.

13.37. For the large wind farm scenario, a small (or low) magnitude of effect was found beyond 35km for 350m or 400m high turbines. As above, a low magnitude of effect may have a significant effect on a high or very high sensitivity receptor such as a National Park or AONB.

13.38. For the same large wind farm scenario, a medium magnitude of effect was found beyond 24km for 350m or 400m high turbines. As above, a medium magnitude of effect may have a significant effect on medium or medium to high sensitivity receptors.

13.39. In relation to viewing wind farms from different heights (6m, 22m and 100m AOD) the assessors found that the level of effects were the same at each height.

Visibility modifiers

13.40. The Met Office visibility data for eight coastal weather stations was analysed. Averaging all coastal stations, the visual range recorded was just under 24km around 50% of the time, just under 30km 33% of the time and around 34km for 20% of the time. The period of best visibility occurred in the summer months.

13.41. To the east of England, visibility lies above 21km for more than half the time and above 35km for more than 20% of the time. The coast of Wales enjoys visibility at the upper end of the 21-25km range for half the time and above 35km around 21-28% of the time. To the south and west England, visibility appears to be less, lying above 16-20km for more than half the time but at 30km+ there appears to be a distinct cut-off point- visibility above 35km is between 1.4% and 6.8% of the time.

13.42. Uncertainties derived from the methodology used to collect some meteorological data and therefore subsequent interpretations introduce some concern about its use to inform wind farm buffers.

13.43. Although it has not been possible to obtain more detailed attributes of sunshine and rainfall, the number of days of sunshine and rain gives an initial idea of which areas could potentially experience higher visibility throughout the year. Overall, it can be concluded generally that southern and eastern areas are drier and sunnier and eastern areas are likely to have clearer and more frequent visibility of wind farms located some distance offshore than the west of England. This reinforces the visibility data. North-facing coasts will experience views of wind farms highlighted by the sun most frequently.

13.44. No observations about fog have been included in the data so no conclusions can be drawn. Other variables that help decipher the presence of fog including relative humidity and dew point (when compared to temperature) were also unobtainable for this study. If contained within a measured sample (at the coastal station) it would be recorded as restricting visibility and so forms part of the overall visibility dataset. However, if it occurred offshore this would not be included.

13.45. The team's experience of long views being regularly possible such as along the Severn Estuary (35km+) or across to Ireland from Wales remind us that visibility at long distances is regularly possible. The site visit in October 2019 to the east coast also indicates that wind farms 29-33km offshore were visible to the human eye even in low contrast weather conditions (Great Gabbard and Dudgeon). However, as discussed by Taylor (2004), visual impact is not solely based on visibility. Wind turbines also may be more or less visible depending on various other factors such as sun and cloud.

13.46. The influence of weather data, particularly relating to visibility, depends on what assessors, decision-makers and ultimately, society, considers is a significant and acceptable percentage of time that an offshore wind farm is likely to be visible or has a worst case significant adverse effect (e.g. excellent visibility with sun on turbines and/or high contrast). Whilst the Culdrose coastal station to the west, away from current Round 4 bidding areas, has very limited or negligible frequency of visibility above 35 km, other coastal stations near relevant Round 4 areas record potential visibility above 35 km between 20-28% of days. 30km is the overall average threshold for visibility for around 30% days per year and is a distinct cut off point to the west of England but less so to the east of England and Wales.

13.47. Ultimately, the amount of variation from marine visibility modifiers is limited to the level of detail on a site by site basis. The UK coastline experiences varied weather patterns that can change in minutes.

Lighting

13.48. DTI guidance (2005) indicates that marine navigation lighting is a secondary impact and is very unlikely to be greater than the visual effects of a wind farm during the day.

13.49. Marine navigational lighting has an intensity which is expected to be visible for up to 18.5km (10 nautical miles) and is located at a level at which it is unlikely to be visible over longer distances due to the curvature of the Earth. It is therefore not considered to be a significant factor in determining buffer distances.

13.50. Aviation lighting is red, more intense, and located on the turbine nacelle. Due to the action of the turbine blades passing in front of the lights they appear to flash when viewed from upwind. Turbine lighting is visible over long distances,

with over 30km recorded. However, effects tend to be more important at closer distances, with Gwynt y Môr 16-23km being an example. The spread of turbines across the horizon is also a factor. If a wind farm is a well contained cluster, effects are less. If the development covers the majority, or all of the horizon, effects are likely to be much greater. It may not be a significant factor where there is already marine lighting, particularly of an industrial nature such as oil rigs. However, in wild and remote seascapes and areas adjacent to certain designated landscapes where tranquillity is a special quality, it may be considered a relevant contributory factor in the siting of offshore wind farms.

Cumulative issues

13.51. Most of the SVIAs analysed concentrate on the additional cumulative effects of a given development, rather than the combined cumulative effect, and so the findings need to be treated with caution. Nevertheless, there is an increase in the cumulative effect of arrays in line with increasing size of turbines. For example, larger turbines 250-300m high have both medium and low average cumulative visual magnitude of effects around 36km from shore.

13.52. The wireline analysis of cumulative scenarios also needs to be treated with caution as it illustrates a worst case scenario with excellent visibility covering all assessed arrays which is likely to be a rare occurrence. Of multiple wind farms from 7km to 35km from shore, it is considered that that there would be a moderate to very large change due to the extent of horizon covered, the size of the nearer clusters and the visual confusion between the wind farm clusters through overlapping of turbines and different sizes of turbines. The worst scenario is considered to be one where large turbines 350m high are in arrays 13km as well as 24km offshore. The best scenario is where the furthest array of 350m turbines is 35km offshore.

13.53. Overall, at a strategic level, it is the combined cumulative effect of a set of developments that is important in understanding the overall visual effects on people and associated effects on seascape character. This is also a particular consideration in the assessment of extensions.

13.54. Seascape sensitivity studies should help inform the most suitable locations for development and explore the thresholds of acceptable change taking combined cumulative impact into account. This would be helpful at a strategic level, preferably once expected MMO guidance has been issued. Studies should be based on further consideration of marine character areas or similar units, proximity to statutory and key designations and related intervisibility. This is outwith the scope of this report.

13.55. Within areas considered to be suitable for offshore wind farms, array design should be a key consideration to optimise the pattern of development. This should include the relationship between arrays including the distance between them, open gaps to the horizon (or far offshore arrays) and the compatibility of the arrays' size of turbines and arrangement. This is also outwith the scope of this report.

Site visit summary

13.56. Site visits were carried out to the north Wales coast in 2016 and the east coast of England and Scotland in 2019. The findings include the following.

13.57. In very good visibility and with sun on turbines, especially behind the viewer, 187m high turbines could be picked out at distances of 33km, but this size of turbine appears very small.

13.58. Even if in shadow with a light horizon behind, 187m high turbines at 33km can be just discerned if searched for.

13.59. Atmospheric interference such as haze, mist and cloud and sunless conditions can obscure or reduce the contrast between light grey turbines and their backcloth meaning that they can be difficult to discern at distances from 8km to 33km.

13.60. When viewed at sea level, the top of the tower, hub and blades of 131m high turbines are still visible at 29km. Therefore, the effect of curvature of the earth on reducing effects, particularly on larger turbines, should not be overstated.

13.61. At lower levels, wind farm layouts can appear less coherent than when viewed from higher viewpoints (e.g. 60m AOD+). Therefore, wind farms do not necessarily have less effect on receptors on low lying coasts themselves (although effects further inland, if flat, are likely to be negligible).

13.62. Wind farm seascapes with views of overlapping arrays have been created off the North Wales coast east of the Great Orme, are nearing this condition in the Thames estuary and may reach this state further up the east coast if extensions reduce or remove visual separation of arrays.

13.63. At night, aviation warning lighting can be significant at 16+km especially with a large spread across the horizon, but not at 33km with a limited spread. Overall, it appears to be less important as a factor than daytime views of the whole turbine.

13.64. In relation to SVIAs, some underestimate effects whilst others appear to be accurate in terms of worst case. Most do not address combined cumulative effects and so the cumulative effects assessments underestimate or minimise the actual overall effects of implemented wind farms on receptors.

Bringing the evidence together

13.65. The analyses from the SVIA and wireline analysis are brought together with part of the NRW, 2019 analysis (**Table 5.4)** in **Table 13.1** below. These reflect the suggested distances for buffers depending on the maximum turbine size (as defined by the 'Rochdale Envelope') and sensitivity of seascape or receptor.

Table 13.1 Overall analysis of the magnitude of visual effect related to distance

Offshore wind farm SVIAs	Low magnitude of effect		Medium magnitude of effect	
Heights of turbine to blade tip (m)	Average Distance km	Maximum Distance km	Average Distance km	Maximum Distance km
107-145	**19.2**	26.1	**14.0**	15.0
150-175	**21.7**	26.5	**15.8**	17.7
176-223	**26.2**	31.9	**20.2**	26.3
250-300	**38.6**	47.6	**27.5**	31.1
301-350	**35-44*** **44****	-	**24-35*** **32.8****	-
351-400	**35-44***	-	**24-35***	-

*Wireline assessment ** NRW, 2019 findings

13.66. The NRW findings are based on a slightly different basis of analysis and with fewer wind farms. However, they are broadly consistent with the findings of this report.

13.67. Whilst the buffer distances above appear precise, there is in reality a continuum of gradually decreasing effects with increasing distance. The scale of effect will also be influenced by the extent of wind farm (especially width across the horizon), its arrangement and turbine spacing, and its relationship with coastal receptors e.g. angle of view and juxtaposition with other elements such as headlands and islands. In addition, at greater distances, the influence of visual acuity and visibility modifiers come into play.

13.68. In terms of visual acuity, the width of the upper part of the turbine tower provides a reasonable indicator of the distance that turbine may be visible in excellent visibility conditions (as it is likely to be seen above the horizon). The largest currently consented turbine towers have a diameter of up to 5m and so, theoretically, can be seen from 50km. Larger turbines 350-400m high are likely to have larger diameter towers and so may be able to be seen from longer distances. Therefore visual acuity is unlikely to be a limiting factor in terms of visual buffers.

13.69. In terms of visual modifiers, averaging all eight coastal stations assessed, the visual range recorded was just under 24km around 50% of the time, just under 30km for 33% of the time, around 34km for 20% of the time and 40km for 10% of the time.

13.70. This means that there is more certainty that wind farms closer to the coast will have the worst case effects expected in SVIAs and the wireline analyses. It is a matter for debate as to the percentage days that the worst case 'significant adverse' effect may be considered 'acceptable' or regarded as 'not significant'. This is a matter for assessors, decision-makers and society as a whole. Most people might consider 50% of days (24km) as being too frequent, particularly as the better visibility days tend to be in the summer. On the other hand, for very sensitive coastal receptors the frequency of visibility may be a limiting factor. 20% (34km) may be considered to be a reasonable conservative threshold limiting harm to a sensitive seascape and 10% (40km) to a very sensitive seascape. For individual wind farms, the nearest two to three weather stations visibility statistics should be reviewed to respond to the local conditions rather than relying on the national averages.

13.71. In respect of designations, Rampion (165-210m high turbines assessed) is located 16km south of the nearest part of the South Downs National Park beyond Brighton, although probably not intervisible with it. It is 20-26km south west of the area where the National Park meets the coast which is also designated Heritage Coast. From here the narrow edge of the array is visible rather than the wider edge which is visible from Brighton. The effects on this stretch of coast were given particular consideration and agreed as significant but were not considered sufficient to refuse the project.

13.72. Navitus Bay (200m high turbines) was proposed 19km from the Dorset AONB to the north west, 23.5km from the Isle of Wight AONB to the north east and 27km from the New Forest National Park at Hurst Castle, having significant visual effects on receptors in each. Both AONBs overlaid Heritage Coast designations. Parts of the coast were orientated towards the array and it interfered with highly sensitive views such as to the Needles. The combined significant effects weighed against the proposal. In addition, the harm caused to the setting of the Dorset and East Devon WHS, the 'less than substantial harm' to its significance and the harm to its outstanding universal value carried significant weight against the decision to make the order. The WHS overlapped the Dorset AONB.

13.73. The Atlantic Array (180m high turbines) was considered to potentially cause significant adverse effects on receptors in Pembrokeshire Coast National Park up to 28km away, Gower AONB at 22km, and North Devon AONB and Exmoor

National Park closer to. All the designations were overlaid with Heritage Coast designations. The balance between these and other effects and the benefits of the project were not ultimately tested as the project was withdrawn by the developer.

13.74. From these samples it appears that National Park/AONB and Heritage Coast combined is the most sensitive combination of designations. Also offshore wind farm development along the coast from these combined designations may be acceptable at a distance but not where the development is viewed directly offshore. In addition, constraints on development increase where more than one area of combined designation is potentially affected.

13.75. Undeveloped undesignated coast is an intermediate category which is taken into account but given significantly less weight than national designations. It is considered that the buffer distances for medium sensitivity coastlines applies here.

13.76. In respect of coastal urban areas, the moderately large scale arrays of Rampion and Gwynt y Môr were approved 13km away from the south coast settlements around Brighton and north coast settlements of Wales respectively. Slightly smaller arrays using larger turbines at Burbo Bank extension and Westermost Rough were approved around 8km from the flat coastal settlements of Hoylake and Withernsea respectively. These distances show that decision makers have considered that some developed flat coastlines have greater tolerance of offshore wind energy development than undeveloped coasts.

13.77. In practice, existing wind farms are used as justifications for extensions in SVIAs. It is therefore difficult to provide a different buffer distance for multiple wind farms. Rather, the ability of a given area to accommodate offshore wind farms will depend partly on the objectives for an individual seascape/marine character area e.g. no offshore wind farms, widely separated wind farms, wind farm seascape; and partly on the design of individual developments and their relationship to each other. The former will be informed by the regional or local seascape character assessments, and sensitivity assessments as these become available. It should be noted that whilst there is a sensitivity assessment for Welsh waters there are no current plans for undertaking sensitivity assessments in the waters around England.

13.78. The following tables bring together the key factors in **Tables 13.2 and 13.3**. **Table 13.4** relates the buffers to different types and sensitivities of receptors.

13.79. The suggested buffers provide a balance between a variety of factors. On the one hand, they respond to current policy where great weight is given to protecting statutory landscapes. On the other, in areas of lesser constraint, they provide lesser buffers which can thus allow offshore wind energy closer inshore. However, for wind farms proposed closer to the coast it will be important to take design into account in terms of space between different developments, and the relationship of turbine sizes and arrangements in related/intervisible arrays.

Table 13.2 – High sensitivity seascapes or receptors where a maximum small effect is desirable

	Suggested distances for buffers								
Research heading	137/145m turbine 3.6MW	175m turbine 5MW	190m turbine 7/8MW	220m turbine 10MW	250m turbine 15MW	300m turbine 15MW	350m turbine 20MW	400m turbine 20MW+	All turbine sizes
Wireline assessment (2016)	Beyond 24km	Beyond 24km	Beyond 24km	Well beyond 24km	Well beyond 24km	-	-	-	-
Wireline assessment (2019)	-	-	-	-	-	-	35-44km (39.5km average)	35-44km (39.5km average)	-
SVIAs effects (2016)	29.9km (3-6MW)		27.2km	-	-	-	-	-	28.7km
SVIAs effects (2019)	19.2km	21.7 km	26.2km			38.6km	-	-	-
Marine Visibility modifiers (2009)	-	-	-	-	-	-	-	-	30km
Marine Visibility modifiers (2019)	-	-	-	-	-	-	-	-	10-20% days visibility-34-40km

Table 13.3 – Medium sensitivity seascapes or receptors where a maximum medium effect is desirable

	Suggested distances for buffers								
Research heading	**137/145m turbine 3.6MW**	**175m turbine 5MW**	**190m turbine 7/8MW**	**220m turbine 10MW**	**250m turbine 15MW**	**300m turbine 15MW**	**350m turbine 20MW**	**400m turbine 20MW+**	**All turbine sizes**
Wireline assessment (2016)	13km-18km	18-24km	18-24km	18-24km	Beyond 24km	-	-	-	-
Wireline assessment (2019)	-	-	-	-	-	-	24-35 km (29.5km average)	24-35 km (29.5km average)	-
SVIAs effects (2016)	20.6km (3-6MW)		18.9km	-	-	-	-	-	19.9km
SVIAs effects (2019)	14km	15.8 km	20.2km			27.5km	-	-	-
Marine Visibility modifiers (2009)	-	-	-	-	-	-	-	-	30km
Marine Visibility modifiers (2019)	-	-	-	-	-	-	-	-	33-50% days visibility 24-30km

Table 13.4 – Possible range of buffers for single offshore developments

			Suggested distances for buffers						
	Value to seascape	Potential sensitivity	107-145m turbine 3.6MW	146-175m turbine 5MW	176-224m turbine 7/8MW	225-300m turbine 15MW	301-350m turbine 20MW	351-400m turbine 20MW+	Notes
National Parks and AONBs with coastal special qualities- often characterised by presence of Heritage Coast designation. Multiple statutory landscape designations.	Very High	Very High	34km	34km	34km	40km	40km	40km	Based primarily on limit of visual significance
National Parks (England and Wales) AONBs World Heritage Sites (Landscape based- e.g. Dorset and East Devon Coast)	Very High	High	19km	22km	26km	39km	40km	40km	Based primarily on SVIA 2019 analysis with wireline analysis and limit of visual significance for larger turbines
Heritage Coasts National Trails	High	Medium/ high and high	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate between high and medium sensitivity buffers
World Heritage Sites (e.g. coastal castles, forts and ancient sites) Landscapes of Outstanding and Special Historic Interest (Wales) Large SAMs Historic Parks and Gardens	Medium-high	Medium and medium/ high	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate between high and medium sensitivity buffers

Local landscape designations									
			Suggested distances for buffers						
	Value to seascape	**Potential sensitivity**	**107- 145m turbine 3.6MW**	**146-175m turbine 5MW**	**176-224m turbine 7/8MW**	**225-300m turbine 15MW**	**301-350m turbine 20MW**	**351-400m turbine 20MW+**	**Notes**
Medium sensitivity seascapes	Medium	Medium	14km	16km	20km	27.5km	30km	30km	Based primarily on SVIA 2019 analysis with wireline analysis and limit of visual significance for larger turbines

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APPENDICES

Appendix A: Abbreviations and Glossary

Abbreviations used in text

AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
BAP	Biodiversity Action Plan
CLVIA	Cumulative Landscape and Visual Impact Assessment
DCO	Development Consent Order
DPO	Draft Plan Option
EIA	Environmental impact assessment
ES	Environmental statement
ExA	Examining Authority
GLVIA	Guidelines for landscape and visual impact assessment
GIS	Geographic information system
HPMCZ	Highly protected marine conservation zone
HSC	Historic Seascape Characterisation
HWM	High water mark
ICZM	Integrated Coastal Zone Management
km	Kilometres
LCA	Landscape character assessment *or* landscape character area
LDP	Local Development Plan
LVIA	Landscape and visual impact assessment
LWM	low water mark
m	metres
MCA	Marine Character Area
MPA	Marine Planning Area
MPS	Marine Policy Statement
MHW	Mean high water
nm	nautical miles
NE	Natural England
NRW	Natural Resources Wales
PEIR	Preliminary Environmental Information Report
PU	Shoreline Management Plan policy unit
RSU	Regional Seascape Unit
RHL	Registered Historic Landscape (Landscapes of outstanding or special historic interest in Wales)
SAC	Special Area of Conservation
SCA	Seascape character assessment / seascape character area
SCT	Seascape character type
SLA	Special Landscape Area
SM	Scheduled Monument
SMR	Scheduled Monument Record
SPA	Special Protection Area

SSSI	Site of Special Scientific Interest
SNH	Scottish Natural Heritage
SVIA	Seascape, (landscape) and visual impact assessment
UKCS	United Kingdom Continental Shelf
WHS	World Heritage Site
ZTV	Zone of theoretical visibility
ZVI	Zone of visual influence

Glossary

Term	*Definition*
Seascape, marine and coastal processes terms	
Abrasion	The mechanical wearing effect on rocks caused by corrosion. The abrading agent can take a variety of forms e.g. sand, pebbles or boulders moving across a rock surface.
Attrition	The mechanism by which the particle size of any material is reduced by friction during transport.
Biogenic	A feature that is created by living organisms, either animal or plant.
Characteristics	elements, features and qualities which make a particular contribution to distinctive character.
Characterisation	the process of identifying areas of similar character, classifying and mapping them and describing their character. (NECR105)
Classification	concerned with dividing the seascape into areas of distinct, recognisable and consistent common character in grouping areas of similar character together. It requires the identification of patterns in the seascape, created by the way the natural and human influences interact and are perceived and experienced to create character in the seascape. (NECR105)
Description	capturing the overall essence of the character of the seascape, with reference to geology, landform, bathymetry, habitats, use of the coast and sea, cultural associations etc, drawing out the ways in which these factors interact together and are perceived and experienced and are associated with events and people.
Demersal	In relation to marine organisms: those which flourish on the ocean floor.
Elements	individual component parts of the seascape such as beaches, cliffs, submerged reefs, sea walls, groynes and rocky outcrops.
Features	particularly prominent or eye-catching elements such as lighthouses, rock stacks and coastal cliffs.
Fetch	The distance of open water across which wind blows or over which wind generated water wave travels, unobstructed by major land obstacles. The amount of fetch helps to determine the magnitude and energy of a wave and therefore its erosional or depositional tendencies on neighbouring shorelines.
Hydraulic action	Force exerted by moving water on rocks e.g. air forced into cracks in solid rocks by breaking waves is capable of causing their disintegration by expanding the fissures.
Key characteristics	those combination of elements which help given area its distinct sense of place. They can in many cases to be 'positive' characteristics but they may also in some cases be 'negative' features which nevertheless are important to the current character of the seascape. (Natural England, 2014)
Landward limits (of a seascape character assessment)	the distance which the seascape character assessment will expand onshore and inland. Such considerations relate to the mainland, peninsulas and islands, regardless of their distance out at sea. The extent is dependent on the purpose and/or scope of the assessment being undertaken.
Littoral	Pertaining to a shoreline.
Longshore drift	A general movement of beach material along the shoreline due to the effect of waves breaking obliquely on to the beach.

Term	*Definition*
Pelagic	In relation to the environment: the open ocean as distinct from the ocean floor. In relation to marine organisms: those which flourish independent of the ocean floor and shoreline environments.
Perception	perception combines the sensory (that which we receive through our senses) with the cognitive (knowledge and understanding gained from many sources and experiences).
Reef	A line of rocks or material in the tidal zone of the coast, submerged at high water but partly uncovered at low water.
Ria	Submerged coastal valley or estuary resulting from a rise of sea level, often associated with post-glacial coasts.
Marine character area	See seascape character area. (Term used for national/regional scale units).
Saltation	Sediment transported by bouncing or hopping along a surface carried by water or wind.
Seascape	Seascape is landscapes with views of the coast or seas, and coasts and the adjacent marine environment with cultural, historical and archaeological links with each other. (MPS)
Seascape character	Seascape character is a distinct and recognisable pattern of elements in the seascape that makes one seascape different from another, rather than better or worse. (NECR105)
Seascape character assessment (SCA)	SCA is the process of identifying and describing variation in the character of the seascape, and using this information to assist in managing change in the seascape. It seeks to identify and explain the unique combination of elements and features that make seascape distinctive. (NECR105)
Seascape or marine character area	These are single unique geographical areas of a particular seascape character type. Each has its own individual character and identity, even though it shares the same generic characteristics with other seascape character areas of the same type. (NECR105)
Seascape or marine character capacity	Seascape capacity refers to the amount of specified development or change which a particular marine or local seascape character area and the associated visual resource is able to accommodate without undue negative effects on its character and qualities. (Adapted from Natural England, 2019)
Seascape or marine character sensitivity	Term applied to marine character and seascape and the associated visual resource, combining judgements of their susceptibility to a specific type of development / development scenario or other change being considered and the value(s) related to that seascape, marine character and visual resource. (Derived from Natural England, 2019)
Seascape or marine character susceptibility	The degree to which a defined seascape or marine character area and its associated visual qualities and attributes might respond to the specified types of development or change without undue negative effects on character and the visual resource. (Adapted from Natural England, 2019)
Seascape or marine character type	These are distinct types of seascape that are relatively homogeneous in character. They are generic in nature in that they may occur in different locations but wherever they occur they share broadly similar combinations of geology, bathymetry, ecology, human influences and perceptual and aesthetic attributes. (NECR105)
Seascape or marine character value	The relative value or importance attached to a seascape or marine character area, which may express national or local consensus, because of its quality, its special qualities including perceptual aspects such as scenic beauty, tranquillity and wildness, natural or historic attributes or features, cultural associations, or its relationship with designated or

	valued landscapes and coasts. (Adapted from Natural England, 2019)
Term	*Definition*
Seascape quality	The physical state of the seascape. It includes the extent to which typical character is represented in individual areas, sometimes referred to as strength of character, the intactness of the seascape from visual, functional and ecological perspectives and the condition or state of repair of individual elements of the seascape. (NECR105)
Seascape strategy	the objectives and overall vision of what the seascape should be like in the future, and what is thought to be desirable for a particular seascape character type or area, as a whole. (Natural England, 2014)
Seascape, (Landscape) and Visual Impact Assessment (SVIA)	SVIA is an established methodology which is used to assess the impact of the development or other use change on seascape, landscape and visual amenity. It includes analysis of the effects during the construction, operation and decommissioning phases of the development, including any restoration or after uses.
Seaward limits (of an SCA)	distance out to sea that the SCA will extend.
Slack	an area of almost motionless water.
Suspension	The process by which lightweight materials are transported by moving water in the zone of turbulent flow.
Swash	The movement of a turbulent layer of water up the slope of the beach as a result of the breaking of a wave. It is capable of moving beach material of substantial size and is an important element in longshore drift.
Swell	A regular movement of marine waves created by wind stress in the open ocean.
Traction	Solid load carried by water.
Other terms associated with landscape	
Amenity (Planting)	planting to provide environmental benefit such as decorative or screen planting.
Analysis	the process of dividing up the seascape/landscape into its component parts to gain a better understanding of it.
Apparent	object visible in the seascape/landscape.
Approach	the step-by-step process by which seascape/landscape assessment is undertaken.
Arable	land used for growing crops other than grass or woody species.
Aspect	in Wales, an aspect is a component of the LANDMAP information recorded, organised and evaluated into a nationally consistent spatial data set. The landscape information is divided into five aspects- geological landscape, landscape habitats, visual and sensory, historic landscape and cultural landscape.
Aspect area	areas defined in each of the LANDMAP aspect assessments which are mutually exclusive
Assessment	term to describe all the various ways of looking at, analysing, evaluating and describing the seascape/landscape or assessing impacts on seascape/landscape and visual receptors.
Biodiversity	the variety of life including all the different habitats and species in the world.

Term	*Definition*
Conservation	the protection and careful management of natural and built resources and the environment.
Complexity	(in the context of describing a skyline)how varied or complicated the skyline is from dead flat with even vegetation at one end of the scale to mountainous with varied vegetation at the other.
Consistent	relatively unchanging element or pattern across a given area of seascape/landscape.
Cultural heritage asset	see heritage asset
Cultural pattern	expression of the historic pattern of enclosure and rural settlement.
Cumulative impacts/effects	either additional changes caused by a proposed development in conjunction with similar developments or the combined effect of a set of developments, taken together
Distinctiveness	see sense of place
Diversity	(in terms of the function of an area) the variety of different functions of an area.
Dominant	main defining feature or pattern.
Effects	term used in environmental impact assessment (EIA) where effects are changes arising from the action, operation or implementation of a proposed development.
Effects, direct	where development lies within a seascape/landscape and physically removes an element or feature e.g. rocks, cliff, coastal vegetation
Effects, indirect	effects away from the development such as perceived change of character or from associated development such as transport infrastructure
Field Boundary	the defined edge of a field whether fence, hedge, bank, ditch or wall.
Field Size	Large 2 Ha Above, Medium Around 1.5 Ha, Small Less Than 1 Ha.
Geology	the study of the origin, structure, composition and history of the Earth together with the processes that have led to its present state.
Ground Type	expression of the soil forming environment and its influence in determining the surface pattern of vegetation and land use.
Hedge	fence of shrubs or low trees, living or dead, or of turf or stone. Though strictly a row of bushes forming a hedge, hedgerow has been taken to mean the same as a hedge.
Hedge bank	earth bank or mound relating to a hedge
Heritage asset	a building, monument, site, place, area or landscape positively identified as having a degree of historical significance meriting consideration in planning decisions. Designated heritage assets include world heritage sites, scheduled ancient monuments, protected wreck sites, battlefields, listed buildings and registered parks and gardens.
Horticulture	intensive form of cropping, such as vegetables or fruit.
Impact	used as part of overall term, as in EIA or LVIA, to help describe the process of assessing potentially significant effects- see effects.
Inherent	dictionary definition- ‘existing as an inseparable part’. In the context of sensitivity means the sensitivity of the seascape/landscape area itself with all its component elements and features rather than its relationship with types of development or adjacent areas.

Term	*Definition*
Integrity	unspoilt by large-scale, visually intrusive or other inharmonious development
Landcover	combinations of natural and man-made elements including vegetation that cover the land surface.
Landform	combinations of slope and elevation which combine to give shape and form to the land.
LANDMAP	*LANDMAP* is the national Geographical Information System (GIS) based information system for Wales, devised by Natural Resources Wales, for taking landscape into account in decision-making. It is a nationally consistent dataset divided into 5 aspects- geological landscapes, landscape habitats, visual and sensory, historical landscapes and cultural landscapes.
Landscape	an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors
Landscape and Visual Impact Assessment (LVIA)	A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity. (GLVIA 3)
Landscape Character	a distinct, recognisable and consistent pattern of elements, features and qualities in the landscape that makes one landscape different from another, rather than better or worse.
Landscape Character Area (LCA)	these are single unique areas which are discrete geographical areas of a particular landscape character. Each has its own individual character and identity. These areas in Wales are primarily derived from LANDMAP aspects.
Landscape Resource	the overall stock of the landscape and its component parts. (The landscape considered as a measurable finite resource like any other e.g. minerals, land, water).
Landscape value	the relative value or importance attached to a landscape (often as a basis for designation or recognition), which expresses national or local consensus, because of its quality, special qualities including perceptual aspects such as scenic beauty, tranquillity or wildness, cultural associations or other conservation issues. In Wales, value is also attributed to each LANDMAP aspect using a variety of criteria.
Magnitude of effect	degree of change
Mixed Farmland	a combination of arable and pastoral farmland
Mosaic	mix of different landcovers at a fine grain such as woodland, pasture and heath.
Objective	method of assessment in which personal feelings and opinions do not influence characterisation or judgements.
Outcrop	the area where a particular rock appears at the surface.
Pastoral	land down to grass either grazed by animals or for cutting.
Physiography	expression of the shape and structure of the land surface as influenced both by the nature of the underlying geology and the effect of geomorphological processes.
Polygon	discrete digitised area in a geographic information system(GIS).
Prominent	Highly conspicuous feature or pattern in the landscape.
Protect	to keep from harm.

Term	*Definition*
Qualities	aesthetic (objective visible patterns) or perceptual (subjective responses by the seascape/landscape assessor) attributes of the seascape such as those relating to scale or tranquillity respectively.
Receptor, visual	people in a variety of different situations who can experience views within an area and who may be affected by change or development. Receptors can include users of public footpaths, open access land, roads, rail or cycleways or urban or rural residents.
Receptor, seascape/landscape	seascape/landscape character areas, designations, elements or features which may be affected by development
Remoteness	physical isolation, removal from the presence of people, infrastructure (roads and railways, ferry and shipping routes) and settlement
Resource	see seascape/landscape resource.
Restore	repair or renew.
Riparian	vegetation associated with the water body, usually a river or stream.
Scenic quality	seascape/landscape with scenes of a picturesque quality with aesthetically pleasing elements in composition
Semi-natural vegetation	any type of vegetation that has been influenced by human activities, either directly or indirectly. The term is usually applied to areas which are reverting to nature due to lack of management.
Sense of place	the character of a place that makes it locally identifiable or distinctive i.e. different from other places. Some features or elements can evoke a strong sense of place e.g. islands, forts, vernacular architecture
Sensory	that which is received through the senses i.e. sight, hearing, smell, touch.
Setting, of a heritage asset	The surroundings in which the asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or a negative contribution to an asset, may affect the ability to appreciate that significance or may be neutral.
Settlement	all dwellings/habitations, whether single or clustered in cities, towns and villages.
Settlement Pattern	the predominant pattern of settlement in an area.
Significance	a measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic. A significant effect needs to be taken into account in decision-making.
Subjective	method of assessment in which personal views and reaction are used in the characterisation process.
Topography	term used to describe the geological features of the Earth's surface e.g. mountains, hills, valleys, plains.
Unity	consistency of pattern over a wide area i.e. the repetition of similar elements, balance and proportion, scale and enclosure.
Value	see landscape value
Vernacular	built in the local style, from local materials.
Visual Effects	effects on specific views and on the general visual amenity experienced by people.

Appendix B Navitus Bay: Comparison of visual impact between SVIA and ExA panel

Navitus Bay: comparison of visual impact between appellant assessors and ExA panel

Note: table contents extracted from Navitus Bay Wind Park Examining Authority's Report on Findings and Conclusions and Recommendation to the Secretary of State 7.4.1 onwards . (Note possible ExA confusion between scale of effect and significance of effect).

Viewpoint details			Appellant assessor (LDA) assessment			Examining authority panel view			
View-point number	Viewpoint name	Minimum distance from array (km)	Sensitivity	Magnitude of effect	Significance	Sensitivity	Magnitude of change/ scale of effect	Significance	Comments
8	St Adhelm's Head- national trail	23.5	High/medium	Medium / low	Moderate (not significant)	High	Medium	Major/ moderate	Conspicuous, eye-catching
9	Durlston Castle and Durlston Country Park	19	High	Medium	Major/ moderate	High	Medium	Major/ moderate	Conspicuous, well-defined, not fore- most predominant feature
A	Anvil Point - Durlston Castle and Durlston Country Park	19.4	High	Medium	Medium?	High?	Medium	Not stated but considered significant	Conspicuous, eye-catching. Significant as one of a sequence of medium scale of effects the effects experienced along the stretch of coast.
11	Ballard Down	22		Medium	Medium?	Not stated	Large – medium?	?	Noticeable, draw the eye.
12	Old Harry Rocks	5 km additional			Major/ moderate	Not stated	Not stated	Major/ moderate	New focal point, compete with the prominence of rocks and chalk cliffs.
B	Swanage Beach North		High/medium	Medium	Medium?	Not stated	Medium?	?	Occupy part of long distance views. Foreground features such as boats and beach related activities draw the eye away from the horizon.

Viewpoint details			Appellant assessor (LDA) assessment			Examining authority panel view			
View-point number	Viewpoint name	Minimum distance from array (km)	Sensitivity	Magnitude of effect	Significance	Sensitivity	Magnitude of change/ scale of effect	Significance	Comments
27	Hurst Castle	27	High/medium	Medium/ low	Moderate (not significant)				
28	The Needles	22.3			Major/ moderate			Major/ moderate	Noticeable but distant feature in views silhouetted between and beyond the Needles
29	Tennyson's monument	23.9	High	Medium/ low	Moderate (not significant)	High	Medium/n low	Moderate (part of a sequence of moderate impacts)	New focal point, discernible
31/32/33	Mottistone, Limerstone Down, Black Gang car park	28+						Not significant	Discernible, only minor alterations the baseline views

Appendix C Atlantic Array- comparative visual impact table

APPENDIX ?: ATLANTIC ARRAY VIEWPOINTS VISUAL EFFECTS ASSESSMENT EVALUATION COMPARISON

SVIA- final						**LUC review for Pembrokeshire Coast National Park**			**NRW** *[Evaluation on White Consultants scale]*			
SLVIA View-point refer-	*Name of viewpoint*	*Distance from nearest turbine [km]*	*Sensitivity of receptors [final ES]*	*Magnitude of change [final ES]*	*Signi-ficance [final ES]*	*Sensit-ivity of recept-ors*	*Magnitude of change*	*Signific-ance*	*Sensit-ivity of recept-ors*	*Magnitude of change*	*Signific-ance*	*Comment*
PCNP												
2	St Govan's Head	27.93	high	negligible	minor	Very high	Medium	Major/ substantial	high	moderate/ slight	moderate	The array would be apparent in clear visibility in an otherwise unspoilt vista of the sea from a dramatic coastline but the receptors would be aware of the MOD use and structures in the vicinity.
3	Broad Haven beach, Bosherton	29.02	very high	negligible	minor	Very high	Medium	Major/ substantial	high [very]	moderate/ slight	major/ moderate	The array would be apparent in clear visibility seen in framed views from the beach beyond Church Rock which is an awkward juxtaposition. The effect is considered significant adverse.
4	Stackpole Head	28.24	very high	negligible	minor	Very high	Medium	Major/ substantial	high [very]	moderate/ slight	major/ moderate	The array would be apparent in clear visibility in an otherwise unspoilt vista of the sea from a dramatic coastline. The 500mm viewing distance visualisation is helpful in showing the real effects of this array. The effect is considered significant adverse.
7	Manorbier	29.21	very high	negligible	minor	Very high	Medium	Major/ substantial	high	moderate/ slight	major/ moderate	The array would be apparent in clear visibility in an otherwise unspoilt vista of the sea. The effect is considered significant adverse.
8	Lydstep	29.27	high	small	moderate [minor at night]	Very high	Medium	Major/ substantial	high	moderate/ slight	major/ moderate	The array would be apparent in clear visibility in an otherwise unspoilt vista of the sea which includes Caldey Island, although an extensive holiday village is visible to the North with associated marine recreation activities including motorboats. The effect is considered significant adverse.
9	Caldey Island	27.5	very high	small	major [moderate at night]	Very high	Medium	Major/ substantial	high [very]	moderate	major/ moderate	The array would be apparent in clear visibility in an otherwise unspoilt vista of the sea from a sensitive viewpoint. The effect is considered significant adverse.
11	Colby Estate	40.64	high	negligible	minor	Very high	Small /negligible	Moderate	high	negligible	negligible	The array would be a distant, barely perceptible feature only visible on the clearest days within a wide arc of view with intervening landscape and coast. The effect is not considered significant due to distance.

Key

Significant effect

Potentially significant effect

Viewpoint distance where all assessors agree there is a significant effect

SLVIA- final						LUC review for National Park			White Consultants review for NRW *[Evaluation on White Consultants scale]*			
SLVIA View-point refer-	*Name of viewpoint*	*Distance from nearest turbine [km]*	*Sensitivity of receptors [final ES]*	*Magnitude of change [final ES]*	*Signi-ficance [final ES]*				*Sensit-ivity of recept-ors*	*Magnitude of change*	*Signific-ance*	*Comment*
Gower												
18	Spaniard Rocks	27.9	very high	small	major [moderate at night]	-	-	-	high	moderate	major/ moderate	The array would be apparent in clear visibility in an otherwise unspoilt vista of the sea beyond the highly distinctive Worms Head. This would be a very awkward juxtaposition spoiling the drama of coastline. The effect is considered significant adverse.
23a	Rhossili Downs southern end	24.61	high	medium	major [moderate at night]	-	-	-	high	moderate	major/ moderate	The array would be noticeable in clear visibility in an otherwise unspoilt vista of the sea beyond the highly distinctive Worms Head. The effect is considered significant adverse.
26	Worms Head near lookout station	23.09	very high	medium	substantial [moderate at night]	-	-	-	high [very]	substantial / moderate	major	The array would be prominent in clear visibility in an otherwise unspoilt vista of the sea beyond the highly distinctive Worms Head. The effect is considered significant adverse.
29	Port Eynon Point	23.74	very high	medium	substantial [moderate at night]	-	-	-	high	substantial /moderate	major	The array would be prominent in clear visibility in an otherwise unspoilt vista of the sea beyond the highly distinctive Worms Head. The effect is considered significant adverse.
34	Reynolds-town, Cefn Bryn	29.9	high	small	moderate [minor at night]	-	-	-	high	slight	moderate	The array would be perceptible in clear visibility within a wide arc of view with intervening landscape and coast. The effect is not considered significant due to the intervening landscape, highly textured with woodland and other vegetation, which assists in drawing the eye from the array, which appears as a distant forest of turbines.
35	Three Cliffs Bay	31.32	very high	negligible	minor	-	-	-	high [very]	moderate/ slight	major/ moderate	The array would be apparent in clear visibility in an otherwise unspoilt vista of the sea beyond the highly distinctive and scenic bay. The effect is considered significant adverse on balance due to its juxtaposition with the bay although it is at a distance.
36	Pwlldu Head	32.41	very high	small	major [moderate at night]	-	-	-	high	moderate/ slight	major/ moderate	The array would be just apparent in clear visibility in an otherwise unspoilt vista of the sea. The effect is considered significant adverse on balance.
37	Mumbles Head	37.12	high	negligible	minor	-	-	-	high	negligible	negligible	The array would be barely perceptible even in clear visibility due to distance. The effect is not considered significant.

Key

Significant effect

Potentially significant effect

Viewpoint distance where all assessors agree there is a significant effect

Appendix D SVIA analysis- individual wind farms

Scheme name	Atlantic Array			
Document	Atlantic Array Offshore Wind Farm Draft ES Volume 1 Chapter 12			
Data source	RWE npower renewables			
Status	Withdrawn			

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW		1390	
No. of turbines		278	approx turbine capacity from interpolation : 5 MW
Turbine blade tip height (m)		180	
Distance from nearest coast km		14	

Effect Note: only land-based viewpoints with small or medium MoE listed

No other windfarms present or proposed (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect (Magnitude of proposed change)	Significance of effect (daytime)
9 Caldey Island	27.5	High	Medium	Minor-moderate
18 Spaniard Rocks	28.0	High	Small	Minor
2 St Govan's head	28.0	Very high	Small	Moderate
23a Rhossili Downs	25.0	High	Medium	Moderate-major
26 Worms Head	23.5	Very high	Medium	Major-substantial
29 Port Eynon	24.0	High	Medium	Minor-moderate
3 Broad Haven	29.0	High	Small	Minor
34 Cefn Bryn	30.0	High	Small	Minor
35 Three Cliffs Bay	31.5	High	Small	Minor
36 Pwlldu Head	32.5	High	Small	Minor
37 Mumbles Head	37.5	High	Small	Minor
4 Stackpole Head	28.5	High	Small	Minor
54 Highveer Point	31.0	High	Small	Minor
55 Silkenworthy Knap	30.0	High	Small	Minor
56 Holdstone Down	28.0	High	Small	Minor
58 Little Hangman	24.5	Very high	Small	Minor
64 Capstone Point	19.0	High	Medium	Minor-moderate
66 Higher Slade	17.5	High	Medium	Minor-moderate
67 Lee Bay	16.5	High	Small	Minor
68 Bull Point	15.0	High	Medium	Minor-moderate
69 NW of Mortehoe	15.0	High	Medium	Minor-moderate
7 Manorbier	29.0	High	Small	Minor
70a Potters Hill	16.5	High	Small	Minor
71 Putsborough Sand	17.5	Very high	Medium	Moderate
72 Baggy Point	16.0	High	Medium	Minor-moderate
73 Saunton Down	19.5	High	Medium	Minor-moderate
74 Braunton Burrows	22.5	High	Small	Minor
75a Westward Ho	26.5	High	Small	Minor
77 Peppercombe	30.0	High	Small	Minor
78 Buck's Mills	30.0	High	Small	Minor
79 Clovelly Harbour	28.5	Very high	Small	Minor
8 Lydstep point	29.0	High	Small	Minor
82 Windbury Head	26.5	High	Medium	Minor-moderate
83 West Titchbury	25.5	High	Medium	Minor-moderate
90a Blegberry	27.5	Medium	Small	Minor
92 Bursdon Moor	33.0	High	Small	Minor
93 Embury Beacon	34.5	High	Small	Minor

Analysis	km	
Max. distance where Low MoE occurred	37.5	Low = Small only
Av. Distance where Low MoE occurred	28.4	Low = Small only
Max. distance where Medium MoE occurred	27.5	Medium only
Av. distance where Medium MoE occurred	20.9	Medium only

Cumulative Effect No other windfarms present or planned

Scheme name	Beatrice		
Document	E S Section 14 Wind Farm Seascape, Landscape and Visual April 2012		
Data source	http://www.marinedataexchange.co.uk		
Status	Under construction		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	588		
No. of turbines	83	142	7 MW
Turbine blade tip height (m)		198	
Distance from nearest coast km	22		

Effect

No other windfarms present or taken into consideration (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect	Significance of effect
1 Duncansby Head	36.74	High	Low to negligible	Moderate to negligible
2 Keiss Pier	27.35	High medium to low	Low to negligible	Moderate to negligible (residents)
3 Sortat	32.49	High	Negligible to none	Negligible to none
4 Wick Bay	18.04	High	Medium	Major to Moderate
5 Sarclet	13.93	High (residents)	High	Major (Residents)
6 Hill O Many Stanes	16.78	High to medium	High	Major to major-moderate
7 Lybster	19.27	High	High to medium	Major to major-moderate
8 Latheron A9	22.98	Medium to low	Medium	Moderate to moderate-minor
9 Dunbeath	25.62	High (residents)	Medium	Major to moderate (residents)
10 Whailgoe Steps	33.06	High (residents)	High	Major (residents)
11 Scaraben	33.06	High	Low	Moderate
12 Navidale	38.05	High medium to low	Low to negligible	Moderate-minor
13 Catchory	29.48	High medium (residents)	Negligible	Negligible
14 Minor Rd Stemster Hill	26.28	Medium to low	Medium to low	Moderate to minor
15 Aberdeen-Orkney Ferry route	19.73	Medium to low	Low to none	Moderate-minor
16 Aberdeen-Orkney Ferry route	29.74	Medium to low	Low to none	Moderate-minor

Analysis	km	
Max. distance where Low MoE occurred	33.1	Low + Medium to low
Av. Distance where Low MoE occurred	29.7	Low + Medium to low
Max. distance where Medium MoE occurred	25.6	Medium only
Av. distance where Medium MoE occurred	22.2	Medium only

Cumulative Effect

Cumulative effect with other windfarms, either existing or proposed (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect (Magnitude of impact)	Significance of effect (Significance of impact)
1 Duncansby Head	36.74	High	Negligible	Negligible
2 Keiss Pier	27.35	High medium to low	Low to negligible	Moderate to negligible (residents)
3 Sortat	32.49	High	Negligible to none	Negligible to none
4 Wick Bay	18.04	High	None	None
5 Sarclet	13.93	High (residents)	Low	Moderate
6 Hill O Many Stanes	16.78	High to medium	Medium	Major to Moderate
7 Lybster	19.27	High	Low	Moderate
8 Latheron A9	22.98	Medium to low	Low	Moderate-minor to minor
9 Dunbeath	25.62	High (residents)	Medium	Major-moderate (residents)
10 Whailgoe Steps	33.06	High (residents)	Low	Moderate (residents)
11 Scaraben	33.06	High	Low	Moderate to moderate-minor
12 Navidale	38.05	High medium to low	Low to negligible	Moderate to negligible (residents)
13 Catchory	29.48	High medium (residents)	High-Medium	Negligible
14 Minor Rd Stemster Hill	26.28	Medium to low	Medium to low	Moderate to minor

Analysis (cumulative)	km	
Max. distance where Low MoE occurred	33.1	Low + medium to low
Av. Distance where Low MoE occurred	24.8	Low + medium to low
Max. distance where Medium MoE occurred	25.6	Medium only
Av. distance where Medium MoE occurred	21.2	Medium only

Scheme name	Burbo Bank Extension		
Document	ES Volume 2 - Chapter 20: Seascape, Landscape and Visual Impact Assessment March 2013 p 49-71		
Data source	http://infrastructure.planninginspectorate.gov.uk/projects/north-west/burbo-bank-extension-offshore-wind-farm/		
Status	Implemented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	254		
No. of turbines	32	36	3.6 MW
Turbine blade tip height (m)	187	141-223	
Distance from nearest coast km	7		

Effect

Additional effect to other existing windfarms as part of baseline (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect	Significance of effect
1 Leasowe Common	7.91	High	High-medium	Major-moderate
2 Hoylake, Near Hilbre Point	8.41	High	High-medium	Major-moderate
3 Crosby Coastguard Station	9.85	High (residents & visitors)	Low	Moderate
4 Fort Perch Rock, New Brighton	11.01	Medium (visitors)	Medium	Moderate
5 Formby – Beach	11.18	High	Medium	Moderate
6 Point of Ayr	12.25	High	High-medium	Major-moderate
7 Thurstaston Common	13.36	High	Medium	Moderate
8 Gwespyr	14.41	High	Medium	Major-moderate
9 Prestatyn (near Nova Centre)	15.33	Medium	Medium	Moderate
10 Craig Fawr, Clywdian Range	18.43	High	Medium	Major-moderate
11 Clieves Hill	20.31	High (residents & visitors)	Low	Moderate
12 Southport Pier	21.99	High (visitors)	Medium	Moderate
13 Pensarn/ Abergele	26.40	Medium (visitors)	Low	Moderate-minor
14 Moelfre Isaf	30.06	High (walkers)	Low	Moderate
15 St Anne's Pier	30.22	Medium (visitors)	Low-negligible	Negligible
16 Starr Gate, Blackpool	32.68	High (residents)	Low-negligible	Negligible
17 Moel Famau, Clwydian Range	24.53	High (walkers)	Negligible	Negligible
18 Great Ormes Head	37.80	High (visitors)	Negligible	Negligible

Analysis	km	
Max. distance where Low MoE occurred	30.6	Low only
Av. Distance where Low MoE occurred	21.7	Low only
Max. distance where Medium MoE occurred	22.0	Medium only
Av. distance where Medium MoE occurred	15.1	Medium only

Cumulative Effect

Cumulative effect with other windfarms, either existing or proposed (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect (Magnitude of change)	Significance of effect (Predicted impact)
5 Formby – Beach	11.18	High	Medium	Moderate
6 Point of Ayr	12.25	High	High-medium	Major-moderate
10 Craig Fawr, Clywdian Range	18.43	High	Medium	Major-moderate
13 Pensarn/ Abergele	26.40	Medium (visitors)	Low	Moderate-minor
17 Moel Famau, Clwydian Range	24.53	High (walkers)	Negligible	Negligible

Analysis (cumulative)	km	
Max. distance where Low MoE occurred	26.4	Low only
Av. Distance where Low MoE occurred	26.4	Low only
Max. distance where Medium MoE occurred	18.4	Medium only
Av. distance where Medium MoE occurred	14.8	Medium only

Scheme name	Docking Shoal			
Document	Seascape and Visual Assessment October 2007 p 51+			
Data source	http://www.marinedataexchange.co.uk			
Status	Withdrawn			

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	540		
No. of turbines		177 (worst case)	3-6 MW
Turbine blade tip height (m)		145	
Distance from nearest coast km	14		

Effect

Additional effect to other existing windfarms as part of baseline (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (sensitivity to change)	Magnitude of effect (Magnitude of operational visual effect)	Significance of effect (Effect significance)
1 Chapel St Leonards	22.90	medium to low	Low	minor to moderate
2 Skegness	20.30	low to medium	Low to medium	minor to moderate
3 Gibraltar Point	22.10	medium to low	Low	minor to moderate
4 Candlebury Hill	31.60	low	Negligible	negligible
5 St Edmunds Point	24.80	medium to low	Low to medium	moderate to minor
6 Brancaster Bay	19.10	medium	Medium	moderate
7 Blakeney Point	17.60	medium to high	Medium to low	moderate
8 Docking	26.30	low to medium	Low	minor

Analysis	km	
Max. distance where Low MoE occurred	26.3	Low + Low to medium + Medium to low
Av. Distance where Low MoE occurred	22.3	Low + Low to medium + Medium to low
Max. distance where Medium MoE occurred	19.1	Medium only
Av. distance where Medium MoE occurred	19.1	Medium only

Cumulative Effect

Cumulative effect with other windfarms, either existing or proposed (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect (magnitude of cumualtive effects)	Significance of effect (Significance of impact)
1 Chapel St Leonards	22.90	medium to low	low	minor
6 Brancaster Bay	19.10	medium	medium to high, to low	Moderate to major, to minor or negligible
7 Blakeney Point	17.60	medium to high	medium to high, to low	Moderate to major, to minor or negligible

Analysis (cumulative)	km
Max. distance where Low MoE occurred	22.9
Av. Distance where Low MoE occurred	22.9
Max. distance where Medium MoE occurred	n/a
Av. distance where Medium MoE occurred	n/a

Scheme name	West of Duddon Sands		
Document			
Data source			
Status	Implemented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	389		
No. of turbines	108	139	3.6 MW
Turbine blade tip height (m)	150	150	
Distance from nearest coast km	14		

Effect

Additional effect to other existing windfarms as part of baseline (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect (Magnitude of impact)	Significance of effect (Significance of impact)
Seascale Beach	41.1	High (Residents)	Negligible	Negligible / Nil
Bootle Fell	32.5	Medium	Very Small	Minor / Negligible
Black Combe	26.3	High	Small	Moderate / Minor
Coastal Path Haverigg	20.2	High	Small	Moderate / Minor
A593 Broughton in Furness	35.9	Medium	Negligible	Nil
A595 Kirkby in Furness	25.4	Moderate	Very Small	Minor / Negligible
Hoad Monument Ulverston	30.8	High	Very Small	Minor
High Haume Farm	23.5	High	Small	Moderate / Minor
BiggarBank, Walney	14.6	High (residents)	Medium	Moderate
South Walney Nature Reserve	7.5	High	Medium	Moderate
Birkrigg Fell	27.1	High	Very Small	Minor
Humphrey Head	35.7	High	Very Small / Negligible	Minor / Negligible
Morecombe Stone Pier	35.1	High	Negligible	Negligible / Nil
St Patrick's Chapel	32.6	High	Very Small	Minor
Rossall Point, Fleetwood	23	High	Small	Moderate / Minor
Blackpool Tower	27.9	High	Very Small	Minor
St Annes Pier	33.8	High	Negligible	Negligible / Nil

Analysis	km	
Max. distance where Low MoE occurred	26.3	Low = 'Small'
Av. Distance where Low MoE occurred	23.3	Low = 'Small'
Max. distance where Medium MoE occurred	14.6	Medium only
Av. distance where Medium MoE occurred	11.0	Medium only

Cumulative Effect

see Walney 1

Scheme name	East Anglia ONE North		
Document	Prelim. Environmental Information Ch. 28 Offshore Seascape, Landscape and Visual Amenity		
Data source	www.scottishpowerrenewables.com		
Status	Application submitted		

Windfarm details	as built or consented	as assessed in ES/SLVIA (worst case)	Notes eg turbine types
Total turbine capacity MW		800	
No. of turbines		53	12-19 MW
Turbine blade tip height (m)		300	
Distance from nearest coast km		36	

Effect

No other windfarms taken into consideration (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity to change, worst case)	Magnitude of effect (Magnitude of change)	Significance of effect
Lowestoft	38.8	Medium-high	Medium-low	Not significant
Kessingland Beach	39.7	Medium-high	Medium-low	Not significant
Covehithe	41.6	High	Low	Not significant
Southwold	43.9	High	Low	Not significant
Gun Hill Southwold	44.4	High	Low	Not significant
Walberswick	45.6	High	Low	Not significant
Dunwich	48.8	High	Low	Not significant
Dunwich Heath and Beach	50.2	scoped out		
Minsmere Nature Reserve	50.9	scoped out		
Sizewell Beach	52.4	scoped out		
Suffolk Coastal Path, Thorpeness - S	53.0	scoped out		
Thorpeness	53.9	scoped out		
Aldeburgh	55.8	scoped out		
Hopton-on-sea	40.9	Medium-high	Low	Not significant
Gorleston-on-sea	42.7	Medium-high	Low	Not significant
Great Yarmouth, South Beach	44.0	scoped out		
Caister-on-sea	46.4	scoped out		

Analysis	km	
Max. distance where Low MoE occurred	48.8	Low + medium low
Av. Distance where Low MoE occurred	42.9	Low + medium low
Max. distance where Medium MoE occurred		No data
Av. distance where Medium MoE occurred		No data

Cumulative Effect

Cumulative effect with other windfarms, either existing or proposed (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity to change, worst case)	Magnitude of effect (Magnitude of change)	Significance of effect
Lowestoft	38.8	Medium-high	Medium	Significant
Kessingland Beach	39.7	Medium-high	Medium-high	Significant
Covehithe	41.6	High	Medium-high	Significant
Southwold	43.9	High	Medium-high	Significant
Gun Hill Southwold	44.4	High	Medium-high	Significant
Walberswick	45.6	High	Medium	Significant
Dunwich	48.8	High	Medium	Significant
Dunwich Heath and Beach	50.2	Medium-high	Medium	Significant
Minsmere Nature Reserve	50.9	Medium-high	Medium	Significant
Sizewell Beach	52.4	Medium	Medium	Not significant
Suffolk Coastal Path, Thorpeness - S	53.0	Medium-high	Medium	Significant
Thorpeness	53.9	High	Medium	Significant
Aldeburgh	55.8	High	Medium	Significant
Hopton-on-sea	40.9	Medium-high	Medium-low	Not significant
Gorleston-on-sea	42.7	Medium-high	Medium-low	Not significant
Great Yarmouth, South Beach	44.0	scoped out		
Caister-on-sea	46.4	scoped out		

Analysis (cumulative)	km	
Max. distance where Low MoE occurred	42.70	Low + medium low
Av. Distance where Low MoE occurred	41.80	Low + medium low
Max. distance where Medium MoE occurred	55.8	Medium only
Av. distance where Medium MoE occurred	49.9	Medium only

Note in ES: Significant seascape / landscape and visual effects are scoped out beyond 50km

Scheme name	East Anglia Two		
Document	Prelim. Environmental Information Vol 3 Ch.28.7 Ch.28 Offshore Seascape, Landscape and Visual		
Data source	www.scottishpowerrenewables.com		
Status	Application submitted		

Windfarm details	as built or consented	as assessed in ES/SLVIA (worst case)	Notes eg turbine types
Total turbine capacity MW		900	
No. of turbines		60	12-19 MW
Turbine blade tip height (m)		300	
Distance from nearest coast km		31	

Effect

No other windfarms taken into consideration (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity to change, worst case)	Magnitude of effect (Magnitude of change)	Significance of effect
1 Lowestoft	32.1	Medium-high	Medium-low	Not significant
2 Kessingland Beach	30.5	Medium-high	Medium	Not significant
3 Covehithe	30.6	High	Medium	Significant
4 Southwold	31.5	High	Medium	Significant
5 Gun Hill Southwold	31.7	High	Medium	Significant
6 Walberswick	32.7	High	Medium	Significant
7 Dunwich	35.0	High	Medium	Significant
8 Dunwich Heath and Beach	35.7	High	Medium	Significant
9 Minsmere Nature Reserve	36.2	Medium-high	Medium	Significant
10 Sizewell Beach	35.6	Medium	Medium	Not significant
11 Suffolk Coastal Path, Thorpeness	35.5	Medium-high	Medium	Significant
12 Thorpeness	35.8	Medium-high	Medium	Significant
13 Aldeburgh	36.4	High	Medium	Significant
14 Orford Castle	40.6	Medium-high	Medium-low	Not significant
15 Shingle Street	46.0	High	Low	Not significant
16 Bawdsey	47.7	Medium	Low	Not significant
17 Old Felixstowe	52.4	scoped out		
18 Orford Ness (Lighthouse)	37.6	Medium-high	Medium	Significant
19 Hopton-on-sea	37.3	Medium-high	Low	Not significant
20 Gorleston-on-sea	40.1	Medium-high	Low	Not significant
21 Great Yarmouth, South Beach	42.9	scoped out		
22 Caister-on-sea	46.6	scoped out		

Analysis	km	
Max. distance where Low MoE occurred	47.7	Low + medium low
Av. Distance where Low MoE occurred	40.6	Low + medium low
Max. distance where Medium MoE occurred	37.6	Medium only
Av. distance where Medium MoE occurred	34.2	Medium only

Cumulative Effect

Cumulative effect with other windfarms, either existing or proposed (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity to change, worst case)	Magnitude of effect (Magnitude of change)	Significance of effect
Lowestoft	32.1	Medium-high	Medium	Not significant
Kessingland Beach	30.5	Medium-high	Medium-high	Significant
Covehithe	30.6	High	Medium-high	Significant
Southwold	31.5	High	Medium-high	Significant
Gun Hill Southwold	31.7	High	Medium-high	Significant
Walberswick	32.7	High	Medium	Significant
Dunwich	35.0	High	Medium	Significant
Dunwich Heath and Beach	35.7	High	Medium	Significant
Minsmere Nature Reserve	36.2	Medium-high	Medium	Significant
Sizewell Beach	35.6	Medium	Medium	Not significant
Suffolk Coastal Path, Thorpeness - S	35.5	Medium-high	Medium	Significant
Thorpeness	35.8	Medium-high	Medium	Significant
Aldeburgh	36.4	High	Medium	Significant
Orford Castle	40.6	Medium-high	Medium-low	Not significant
Shingle Street	46.0	High	Low	Not significant
Bawdsey	47.7	Medium	Low	Not significant
Old Felixstowe	52.4	scoped out		
Orford Ness (Lighthouse)	37.6	Medium-high	Medium	Significant
Hopton-on-sea	37.3	Medium-high	Medium-low	Not significant
Gorleston-on-sea	40.1	Medium-high	Medium-low	Not significant
Great Yarmouth, South Beach	42.9	scoped out		
Caister-on-sea	46.6	scoped out		

Analysis (cumulative)	km	
Max. distance where Low MoE occurred	47.7	Low + medium low
Av. Distance where Low MoE occurred	42.3	Low + medium low
Max. distance where Medium MoE occurred	37.6	Medium only
Av. distance where Medium MoE occurred	35.3	Medium only

Note in ES: Significant seascape / landscape and visual effects are scoped out beyond 50km

Scheme name	Greater Gabbard		
Document	Greater Gabbard Offshore Wind Farm ES - SLVIA Chapter 10.3		
Data source	https://tethys.pnnl.gov/publications/greater-gabbard-offshore-wind-farm-environmental-statement, 4COffshore		
Status	Implemented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	504		
No. of turbines	140	141	3.6 MW
Turbine blade tip height (m)	131	170	
Distance from nearest coast km	23		

Effect

No other windfarms taken into consideration (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect (Magnitude of change - worst case of excellent visibility)	Significance of effect (Significance of impact)
VP1 Orford Castle	28.00	High	Moderate-substantial	Not significant
VP2 Old Felixstowe Seafront	33.50	High	Moderate-substantial	Not significant
VP3 Aldeburgh seafront	29.00	High	Substantial	Not significant
VP4 North of Alderton	32.50	Moderate	Moderate-substantial	Not significant
VP5 Orford Ness nr lighthouse	25.00	High	Substantial	Not significant
VP6 Shingle Street	30.50	High	Moderate-substantial	Not significant

Analysis	km	
Max. distance where Low MoE occurred		no data
Av. Distance where Low MoE occurred		no data
Max. distance where Medium MoE occurred		no data
Av. distance where Medium MoE occurred		no data

Cumulative Effect Chapter 10.5 indicates very limited effects, minor or none

Scheme name	Gunfleet Sands 2		
Document	Gunfleet Sands 2 Offshore Wind Farm Environmental Statement 2007 Section 12		
Data source	https://tethys.pnnl.gov, 4COffshore		
Status	Implemented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	173		
No. of turbines	48	22	3.6 MW turbines
Turbine blade tip height (m)	128		
Distance from nearest coast km	8.5		

Effect

Other windfarms present or planned are taken into consideration (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity to change)	Magnitude of effect (Magnitude of change)	Significance of effect
Cliff top, The Naze	13	Medium - low	Medium - low	Moderate - Minor
Greensward, Frinton-on-Sea	9.5	Medium - low	Medium - low	Moderate - Minor
Public Footpath, Great Holland	10	Medium - low	Medium - low	Moderate - Minor
Radar Tower, Holland Haven	8.3	Medium - low	Medium - low	Moderate - Minor
Seafront Promenade, Clacton-on-Sea	8.9	Low	Low	Minor
Sea Defence, Seawick	10.1	Low	Low	Minor
Beach at West Mersea	19.6	Medium - low	Low	Minor
Bradwell Bird Observatory	17.5	Medium	Low	Minor - Moderate

Analysis	km	
Max. distance where Low MoE occurred	19.6	Low + Medium-low
Av. Distance where Low MoE occurred	12.1	Low + Medium-low
Max. distance where Medium MoE occurred		no data
Av. distance where Medium MoE occurred		no data

Cumulative Effect

No viewpoint data

12.7.9

The cumulative magnitude of effect of the Round 1 offshore wind farms with the GS2 development is therefore considered to be Low. When combined with a generally Low - Medium sensitivity to change to the GS2 development the significance of cumulative effect is considered to be Minor with the generally open exposed and remote foreshore areas providing some capacity for change. The cumulative impact is then generally reduced further inland and to the north.'

Scheme name	Gwynt y Mor		
Document	Gwynt y Môr Offshore Wind Farm Environmental Statement Chapter 10		
Data source	https://tethys.pnnl.gov/		
Status	Implemented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	576		
No. of turbines	160		3.6 MW
Turbine blade tip height (m)	140		
Distance from nearest coast km	18		

Effect

Additional effect to other existing windfarms as part of baseline (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect (Magnitude of impact)	Significance of effect (Significance of impact)
Bull Bay	42.3	Moderate	Negligible	Insignificant
Point Lynas	37.1	Moderate to High	Negligible	Slight
Mynydd Eilian	38	Moderate to High	Negligible	Slight
Moelfre Headland	35	Moderate to High	Negligible	Slight
Red Wharf Bay	35.9	Moderate to High	Negligible	Slight
Bwrdd Arthur	30.9	Moderate to High	Small	Slight to Moderate
Penmon Point	28	Moderate to High	Small	Slight to Moderate
Beaumaris	32.2	Moderate	Small	Slight
Bangor Pier	35.8	Low to Moderate	Small	Insignificant
Carnedd Llywelyn	36.7	High	Negligible	Slight
Llanfairfechan	27.8	Moderate	Negligible	Insignificant
Conwy Mountain	21.4	Moderate to High	Small to Medium	Moderate
Great Orme Summit	16.2	Moderate to High	Small to Medium	Moderate
Great Orme Summit	15.8	Moderate to High	Small to Medium	Moderate
Great Orme Rest and Be Thankful	16	Moderate to High	Small to Medium	Moderate
Llandudno Promenade monument	16.2	Moderate	Medium to Large	Moderate to Substantial
Llandudno Promenade conf centre	16.2	Moderate	Medium to Large	Moderate to Substantial
Landudno Promenade Paddling Pool	15.7	Low to Moderate	Medium to Large	Moderate
Rhos-on-Sea	14.3	Low to Moderate	Medium	Slight to Moderate
Bryn Euryn	15.7	Moderate	Small to Medium	Slight to Moderate
Mynydd Marian	15.3	Low to Moderate	Medium	Slight
Abergale (Pensarn Station)	13.9	Low	Medium to Large	Slight to Moderate
Rhyl Aquarium	13.1	Low	Medium to Large	Slight to Moderate
Graig Fawr	15.9	Moderate to High	Small to Medium	Moderate
Prestatyn Nova Centre	12.7	Low	Medium	Slight
Gwaenysgor	14.9	Low to Moderate	Medium	Slight to Moderate
Point of Ayr	14.6	Moderate	Small to Medium	Slight to Moderate
Thurstaston Common	24.5	Moderate to High	Small	Slight to Moderate
Grange Hill	21.1	Moderate	Small	Slight
Hilbre Point	19.1	Moderate	Small to Medium	Slight to Moderate
New Brighton	25.7	Low	Small	Insignificant
Crosby	28	Low	Small	Insignificant
Formby Point	26.4	Moderate to High	Small	Slight to Moderate
Southport Pier	37	Low	Negligible	Insignificant
Snowdon Summit	54.9	High	Negligible	Insignificant
Blackpool Tower	47.7	Low	Negligible	Insignficant

Analysis	km	
Max. distance where Low MoE occurred	35.8	Low = 'Small' + Small to medium
Av. Distance where Low MoE occurred	22.3	Low = 'Small' + Small to medium
Max. distance where Medium MoE occurred	15.3	Medium only
Av. distance where Medium MoE occurred	14.3	Medium only

Cumulative Effect

Chapter 12.6 16 not found online

Scheme name	Hywind Scotland Pilot Park		
Document	Hywind Scotland Pilot Park Environmental Statement -SLVIA March 2015 Statoil		
Data source	http://www.statoil.com/en/EnvironmentSociety/Environment/impactassessments/NewEnergy/IntWind/Pages/HywindScotland		
Status	Implemented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	30		
No. of turbines	5	5	6 MW
Turbine blade tip height (m)	159-178		
Distance from nearest coast km	23		

Effect

No other windfarms present or taken into consideration (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (senitivity of viewpoint)	Magnitude of effect	Significance of effect (level of impact)
1 Scotstown Head	26.0	High	Minor	Minor
2 Gable Braes, Peterhead	23.0	High	Minor	Minor
3 Slains Castle Car Park	26.0	Medium	Minor	Minor
4 Near A950 Thunderton	29.0	Medium	Minor	Minor
5 Peterhead Bay	25.4	Medium/high	Minor	Minor
6 Reform Tower	25.6	Medium/high	Minor	Minor
7 Stirling Hill	26.2	Medium/high	Minor	Minor

Analysis	km	
Max. distance where Low MoE occurred	29.0	Low = 'Minor' only
Av. Distance where Low MoE occurred	25.9	Low = 'Minor' only
Max. distance where Medium MoE occurred		no data
Av. distance where Medium MoE occurred		no data

Cumulative Effect no data found

In ES:

Subject to the exact extent and configuration of the ZTVs for these developments, a degree of cumulative and in combination impact may potentially occur relating to simultaneous or successive visibility. However, due to the low magnitude of change relating to any visibility should it occur, deriving from the very long separation distances both between the developments under consideration, and between each development and the receptors being assessed, it is not considered that any of these would result in a significant effect.

Scheme name	Inch Cape (updated 2019)			
Document	EIA 2018, Non Technical Summary, and Volume 12B (Viewpoints chapter 12C).			
Data source	Marine Scotland			
Status	Consented			

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	784	1000	
No. of turbines		40 - 72	min 9.5 MW
Turbine blade tip height (m)		291	
Distance from nearest coast km	15		

Effect

Additional effect to other existing windfarms as part of baseline (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity of visual receptor)	Magnitude of effect (Magnitude of change)	Significance of effect (Effect on visual amenity)
1 Garron Point	43.7	High	Low	Minor/moderate
5 Montrose	20.0	High	High	Major
6 Braehead of Lunan	19.5	High	High	Major
9 Minor Road S of Cairnconon Hill	27.0	Moderate	High	Moderate/major
10 Clifftop Path N of Victoria Park	18.6	High	High	Moderate/major
11 Arbroath Signal Tower	19.7	High	High	Moderate/major
4 Cairn o' Mount	42.9	High	Low	Minor/moderate
8 White Caterthun Hill Fort	38.8	High	Low	Moderate
13 Dodd Hill	38.0	High	Low	Minor/moderate
15 Dundee Law	43.7	High	Low	Moderate
17 Strathkinness	39.4	High to moderate	Low	Minor/moderate
19 Largo Law	48.4	High	Low	Minor/moderate
20 B9131 South of Dunino	36.2	Moderate	Low	Minor/moderate
22 Anstruther Easter	36.4	High	Low	Moderate
26 North Berwick Law	52.50	High	Low	Moderate/major
2 A92, North of Inverbervie	30.0	High to moderate	Medium	Moderate/major
3 Beach Road, Kirkton	24.1	High	Moderate	Moderate/major
12 A92 East of Muirdrum	25.2	High to moderate	Moderate	Moderate/major
14 Carnoustie	26.7	High	Moderate	Moderate
16 Tentsmuir	33.4	High	Moderate	Moderate/major
18 St Andrews, East Scores	34.8	High	Moderate	Moderate/major
21 Kingsbarns	30.6	Moderate	Moderate	Moderate
23 Fife Ness, Lochaber Rock	28.32	High	Moderate	Moderate/major
24 Isle of May	34.40	High	Moderate	Moderate/major
7 Brechin	31.7	Moderate	Negligible	Negligible
25 Dunbar	51.00	High	Negligible	Minor/moderate

Analysis	km	
Max. distance where Low MoE occurred	52.5	Low only
Av. Distance where Low MoE occurred	42.0	Low only
Max. distance where Medium MoE occurred	34.8	Includes Medium and Moderate
Av. distance where Medium MoE occurred	29.7	Includes Medium and Moderate

Cumulative Effect

There are no parts of the study area where the Inch Cape WTGs will be visible only with these two application and scoping stage wind farms, which would only be seen in the south west part of the study area. In this context and particularly given the considerable distance between these two proposed wind farms, it is considered that the effects of the Inch Cape WTGs and OSPs with the baseline of operational and consented wind farms and these two proposed wind farms, would be no greater than the effects assessed for Inch Cape with the operational and consented developments included in the assessment. '

Scheme name	Kentish Flats		
Document	Kentish Flats Environmental Statement 8.5.10		
Data source	GREP UK		
Status	Implemented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	90		Note extn 2015 49.5 MW 15x3.3 MW
No. of turbines	30		3 MW
Turbine blade tip height (m)	115	140	
Distance from nearest coast km	8		

Effect

No other windfarms present or taken into consideration (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect (Magnitude of change)	Significance of effect (Significance of change)
1 St Peters Chapel	30.9		Negligible	Moderate/Minor
2 Pier at Southend-on-Sea	23.7		Slight	Moderate/Minor
3 Warden	12.1		Moderate	Moderate
4 Whitstable (Tankerton)	9.6		Substantial	Major/Moderate
5 Whitstable (Bayview Hill)	12		Moderate	Moderate
6 Herne Bay Museum	8.7		Substantial	Major/Moderate
7 Margate	18.8		Slight	Moderate/Minor
8 North Downs Way	26.9		Slight	Moderate/Minor
9 Shoeburyness	19		Slight	Moderate/Minor
10 Thanet, A256 neat Westwood	20.6		Slight	Minor
11 Reculver / Saxon Shore Way	9.5		Moderate	Major/Moderate
12 Sheerness	20.5		Slight	Moderate/Minor
13 Faversham	18.5		Slight	Minor

Analysis	km	
Max. distance where Low MoE occurred	26.9	Low = 'Slight'
Av. Distance where Low MoE occurred	21.1	Low = 'Slight'
Max. distance where Medium MoE occurred	12.1	Medium = "Moderate'
Av. distance where Medium MoE occurred	11.2	Medium = "Moderate'

Cumulative Effect p 100

Cumulative effect with other windfarms, either existing or proposed (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect (Magnitude of cumulative change)	Significance of effect (Cumulative effects)
1 St Peters Chapel	30.9	High	Slight	Moderate/minor

Analysis (cumulative)	km	
Max. distance where Low MoE occurred	30.90	Low = 'Slight'
Av. Distance where Low MoE occurred	30.90	Low = 'Slight'
Max. distance where Medium MoE occurred	n/a	
Av. distance where Medium MoE occurred	n/a	

Scheme name	Kincardine Offshore		
Document	ES March 2016 and Section 36C Variation ES 2017 (revised layout)		
Data source	Marine Scotland		
Status	Under construction		

Windfarm details	as built or consented	as assessed in ES/SLVIA (2017 update)	Notes eg turbine types
Total turbine capacity MW		50	
No. of turbines		7	Six up to 8.4 MW and one 2 MW
Turbine blade tip height (m)		upto 176	
Distance from nearest coast km	15		

Effect

No other windfarms present or taken into consideration (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity of receptors)	Magnitude of effect	Significance of effect (Significance of impact)
Newburgh (carpark to links)	35.0	Low	Moderate	Minor-moderate
Balmedie	29.0	Low	Moderate	Minor-moderate
Regular ferry routes	19.0	Moderate	Low	Minor-moderate
Eastern Boulevard Aberdeen	21.0	Moderate-high	Low	Minor-moderate
East side of Castlehill	20.0	Moderate-high	Moderate-high	Minor-moderate
Torry Battery/Girdleness Point	18.0	Moderate-high	Low	Minor-moderate
Doonies Farm	17.0	Moderate-high	Moderate	Minor-moderate
Coastal path - Finhon	15.0	High	Moderate	Moderate-major
Portlethen	16.0	Moderate-low	Moderate	Moderate
Downies	15.0	High-moderate	Moderate	Moderate-major
Cookney	20.0	Low	Moderate	Minor-moderate
Newtonhill	16.0	Moderate	Moderate	Moderate
Muchalls	17.0	Moderate-low	Moderate	Moderate
Railway (bridge of Muchalls)	18.0	Moderate-low	Moderate	Moderate
A90 Trunk Road	18.3	Moderate-low	Moderate	Moderate
Stonehaven Golf Course	19.0	Moderate-high	Moderate	Moderate-major
Stonehaven Harbour	20.0	High	Low	Minor-moderate
Stonehaven War Memorial	20.0	High	Low	Moderate
Dunnottar Castle car park	21.0	High	Low	Moderate
Dunnottar Castle (coastal path)	22.0	High	Low	Moderate
Catterline (south)	24.0	High	Low	Moderate
Gourdon(eastern end of village)	31.0	Moderate-low	Low	Minor-moderate
Johnshaven (beach)	36.0	Moderate-low	Low	Minor-moderate

Analysis	km	
Max. distance where Low MoE occurred	36.0	Low only
Av. Distance where Low MoE occurred	23.2	Low only
Max. distance where Medium MoE occurred	35.0	defined as Moderate
Av. distance where Medium MoE occurred	19.6	defined as Moderate

Cumulative Effect

P 521 of ES states:
The EOWDC has been considered as part of the assessment due to its proximity to this project (17km), and therefore mutual viewpoints were assessed where necessary to the north of Aberdeen. As the additional windfarms in the table below are >35km, no further cumulative impact is deemed necessary as part of this assessment as they do not share any mutual viewpoints. Additionally, there are no known windfarms in planning phase to be considered.

Scheme name	London Array Offshore Phase 1		
Document	ES Landscape Seascape and Visual Assessment Appendix 5.1		
Data source	http://marinedataexchange.co.uk		
Status	Implemented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	630		
No. of turbines	175	up to 271	3.6 MW
Turbine blade tip height (m)	147	175	
Distance from nearest coast km	21		

Effect

Additional effect to other existing windfarms as part of baseline (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect (Magnitude of impact)	Significance of effect (Significance of impact)
Deal	40	High	None	None
North Foreland	22	High	Low to Negligible	Negligible
Margate - Cliftonville/Palm Bay	21	High	Low	Slight Adverse
Margate - Walpole Bay	21	High	Low	Slight Adverse
Chislet / West Thanet	27	Low	Low to Negligible	Negligible
Reculver	27	High	Low to Negligible	Negligible
Herne Bay	31	High	Negligible	Negligible
Whitstable	34	Medium	Negligible	Negligible
Swale	44	High	None	None
Shoeburyness	40	Medium	Negligible	Negligible
Shoebury Ness	36	Medium	Negligible	Negligible
Burnham on Crouch	40	Medium	Negligible	Negligible
Blackwater Estuary	40	Medium	Negligible	Negligible
Clacton-on-Sea	24	Medium	Low to Negligible	Negligible
Holland-on-Sea	24	Medium	Low to Negligible	Negligible
Naze Tower	24	Medium	Low to Negligible	Negligible
Harwich Seafront	31	Medium	Negligible	Negligible
Felixstow Seafront	31	Medium	Negligible	Negligible

Analysis	km	
Max. distance where Low MoE occurred	21.0	Low only
Av. Distance where Low MoE occurred	21.0	Low only
Max. distance where Medium MoE occurred		no data
Av. distance where Medium MoE occurred		no data

Cumulative Effect no data found

ES ordered from marine data exchange but download failed

Scheme name	Navitus Bay	
Document	Environmental Statement Volume C Chapter 13 Seascape Landscape and Visual p224+	
Data source	http://infrastructure.planningportal.gov.uk/projects/south-east/navitus-bay-wind-park	
Status	Refused on grounds of visual and cumulative impact.	

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW		970	
No. of turbines		121 (up to 194)	8 MW
Turbine blade tip height (m)		200	
Distance from nearest coast km	14		

During planning application process scheme was changed under a TAMO to 105 turbines of 6.5 MW at min distance of 19km.

Effect

No other windfarms present or taken into consideration (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect (Magnitude)	Significance of effect (Significance of impact)
6 - Whiteways, Povington Hill	28.2	High	Low	Moderate
7 Swyre Head	23.1	High	Medium	Major-moderate
8 St Aldhelm's Head	19.0	High-medium	Medium	Major-moderate
9 Duriston Castle	14.4	High-medium	High-medium	Major-moderate
12 Old Harry Rocks	16.3	High	Medium	Major-moderate
16 Constitution Hill	25.6	High	Very low	Negligible
20 Hengisbury Head	20.4	High	Medium-low	Moderate
27 Hurst Castle	23.0	High-medium	High	Major
28 The Needles	17.7	High	High	Major
29 Tennyson's monument	19.5	High	Medium	Major-moderate
32 Limerstone Down	26.1	High	Medium-low	Moderate
33 Blackgang Car Park	27.8	High	Low-very low	Minor

Analysis	km	
Max. distance where Low MoE occurred	28.2	Low + Medium-low
Av. Distance where Low MoE occurred	24.9	Low + Medium-low
Max. distance where Medium MoE occurred	23.1	Medium only
Av. distance where Medium MoE occurred	19.5	Medium only

Cumulative Effect

Cumulative effect with other windfarms, either existing or proposed (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect	Significance of effect (Significance of impact)
6 - Whiteways, Povington Hill	28.2	High	Medium	Major-moderate
33 Blackgang Car PArk	27.8	High	Medium	Major-moderate

Analysis (cumulative)	km	
Max. distance where Low MoE occurred		no data
Av. Distance where Low MoE occurred		no data
Max. distance where Medium MoE occurred	28.2	
Av. distance where Medium MoE occurred	28.0	

Scheme name	Neart na Gaoithe			
Document	ES - Chapter 21 Seascape, Landscape and Visual Impacts			
Data source	http://www.neartnagaoithe.com/environmental-statement1.asp			
Status	Consented			

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	448		
No. of turbines	45-54	64 -128	8-10 MW
Turbine blade tip height (m)	208	175 to 197	
Distance from nearest coast km	15		

Effect

Additional effect to other existing windfarms as part of baseline (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect	Significance of effect (Significance of impact)
2 Beach Road, Kirkton, St Cyrus	49.00	High	Negligible	None
5 Dodd Hill	43.90	Medium	Negligible	None
6 Braehead of Lunan	39.00	High	Low	Moderate-minor
7 Arbroath	30.8	High	Medium-low	Moderate
8 Carnoustie	31.70	Medium	Medium-low	Moderate
9 Dunedee Law	44.90	Medium	Negligible	None
10 Tentsmuir	31.80	High	Medium-low	Moderate
11 Strathkinness	33.10	High	Low-negligible	Minor
12 St Andrews, East Scores	28.20	High	Low	Moderate
13 Fife Ness, Lochaber Rock	15.50	High	High	Major
14 Anstruther Easter	21.80	High	High	Major
15 Largo Law	36.80	Medium	Negligible	None
16 Isle of May	16.30	High	High	Major
17 North Berwick Law	33.00	High	Low	Moderate
18 Dunbar	28.00	High	Medium	Major-moderate
19 West Steel	34.90	Medium	Low	Minor
20 Coldingham Moor	32.80	Medium	Medium-low	Minor
21 St Abb's Head	33.00	High	Medium-low	Moderate

Analysis	km	
Max. distance where Low MoE occurred	39.0	Low + medium low
Av. Distance where Low MoE occurred	32.9	Low + medium low
Max. distance where Medium MoE occurred	28.0	Medium only
Av. distance where Medium MoE occurred	28.0	Medium only

Cumulative Effect

Cumulative effect with other windfarms, either existing or proposed (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect (Magnitude of impact)	Significance of effect (Cumulative impact significance - additional impact of Neart na Gaoithe in addition to all other cumulative wind farms)
2 Beach Road, Kirkton, St Cyrus	49.00	High	no info	Minor
5 Dodd Hill	43.90	Medium	no info	Minor
6 Braehead of Lunan	39.00	High	no info	Moderate-minor
7 Arbroath	30.8	High	no info	Moderate-minor
8 Carnoustie	31.70	Medium	no info	Moderate-minor
9 Dunedee Law	44.90	Medium	no info	Minor
10 Tentsmuir	31.80	High	no info	Major-moderate
11 Strathkinness	33.10	High	no info	Moderate-minor
12 St Andrews, East Scores	28.20	High	no info	Major-moderate
13 Fife Ness, Lochaber Rock	15.50	High	no info	Major
14 Anstruther Easter	21.80	High	no info	Major-moderate
15 Largo Law	36.80	Medium	no info	Minor
16 Isle of May	16.30	High	no info	Major
17 North Berwick Law	33.00	High	no info	Moderate-minor
18 Dunbar	28.00	High	no info	Moderate
19 West Steel	34.90	Medium	no info	Minor
20 Coldingham Moor	32.80	Medium	no info	Moderate-minor
21 St Abb's Head	33.00	High	no info	Moderate-minor

Analysis (cumulative)	km	
Max. distance where Low MoE occurred		no data
Av. Distance where Low MoE occurred		no data
Max. distance where Medium MoE occurred		no data
Av. distance where Medium MoE occurred		no data

Scheme name	North Hoyle		
Document	North Hoyle Offshore Wind Farm Environmental Statement Chapter 5.3		
Data source	https://infrastructure.planninginspectorate.gov.uk		
Status	Implemented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	60		
No. of turbines	30		2 MW
Turbine blade tip height (m)	107		
Distance from nearest coast km	7.5		

Effect

No other windfarms present appear to be taken into consideration (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity to change)	Magnitude of effect (Magnitude of change)	Significance of effect (Significance of effects)
1 Thos-on-Sea	20.4	Moderate	Low	Low to Moderate
2 Bryn Euryn	21.8	Moderate	Low	Low to Moderate
3 Mynydd Marian	18.7	Low to Moderate	Low	Low
4 Abergale / Pensam Station	14.2	Moderate	Low	Low to Moderate
5 Rhyl Aquarium	9.2	Low	Moderate	Low to Moderate
6 Graig Fawr	10.8	Moderate	Moderate	Moderate
7 Marian Ffrith	13.5	High	Moderate	Moderate to High
8 Prestatyn - Nova Centre	7.5	Low	High	Moderate
9 Point of Ayr	9.5	High	High	High
10 Bryn-Ilwyn - Viewpoint	9.6	Moderate	High	Moderate to High
11 Thurstaston Common	19.8	High	Low	Low to Moderate
12 Hilbre Point	14.8	Moderate to High	Low	Moderate

Analysis	km	
Max. distance where Low MoE occurred	21.8	Low only
Av. Distance where Low MoE occurred	18.3	Low only
Max. distance where Medium MoE occurred	13.5	Medium only (=Moderate)
Av. distance where Medium MoE occurred	11.2	Medium only (=Moderate)

Cumulative Effect see p52 (terminology in brackets if different in document)

Cumulative effect with other proposed windfarms, at Rhyl Flats and Burbo

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect	Significance of effect
1 Thos-on-Sea	20.4	Moderate	Low	
11 Thurstaston Common	19.8	High	Low	
3 Mynydd Marian	18.7	Low to Moderate	Low	
2 Bryn Euryn	21.8	Moderate	Low	
4 Abergale / Pensam Station	14.2	Moderate	Low	
12 Hilbre Point	14.8	Moderate to High	Low to moderate	
5 Rhyl Aquarium	9.2	Low	Moderate	
8 Prestatyn - Nova Centre	7.5	Low	Moderate	
6 Graig Fawr	10.8	Moderate	Moderate	
7 Marian Ffrith	13.5	High	Moderate to High	
10 Bryn-Ilwyn - Viewpoint	9.6	Moderate	Moderate to high	
9 Point of Ayr	9.5	High	High	

Analysis (cumulative)	km	
Max. distance where Low MoE occurred	20.4	Low + Low to moderate
Av. Distance where Low MoE occurred	18.3	Low + Low to moderate
Max. distance where Medium MoE occurred	10.8	Medium only (=Moderate)
Av. distance where Medium MoE occurred	9.2	Medium only (=Moderate)

Scheme name	Moray East (updated 2019)			
Document	ES Scoping Report March 2017, Chapter 9 Seascape, landscape and visual assessment.			
Data source	Marine Scotland			
Status	Consented	Construction has started		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	950	1116	
No. of turbines	100	137	9.5 MW
Turbine blade tip height (m)	to 280		
Distance from nearest coast km	22		

Effect

No other windfarms present

(terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect (Magnitude of change)	Significance of effect (Significance of residual effects)
1 Duncansby Head	42.00	Medium-high	Low	Not significant
2 Keiss Pier	35.00	Medium-high	Low	Not significant
3 Sortat	40.00	Medium-low	Low-negligible	Not significant
4 Wick Bay	26.00	Medium-high	Medium	Significant
5 Sarclet	23.00	Medium	Medium	Significant
6 Hill O' Many Stanes	24.00	Medium-high	Medium	Significant
7 Lybster (end of Main Street)	27.00	Medium-high	Medium	Significant
8 Latheron (A9)	31.00	Medium-high	Medium	Significant
9 Dunbeath (nr Heritage Centre)	34.00	Medium-high	Medium	Significant
10 Berriedale (A9)	36.00	Medium-high	Medium-low	Not significant
11 Morven	49.00	Medium-high	Low	Not significant
12 Navidale	45.00	Medium-high	Medium-low	Not significant
13 Catchory	39.00	Medium	Low	Not significant
14 Minor Rd, S side Stemster Hill	34.00	Medium-low	Medium-low	Not significant
15 Whaligoe Steps	23.00	Medium-high	Medium	Significant
16 Lossiemouth Harbour	46.00	Medium	Low	Not significant
17 Buckie, Cliff Terrace	44.00	Medium-low	Low	Not significant
18 Portnockie - Bow Fiddle Rock	41.00	Medium-high	Low	Not significant
19 Cullen, Viaduct & cycle path	43.00	Medium-high	Low	Not significant
20 Bin Hill	46.00	Medium	Low	Not significant
21 Findlater Castle	43.00	Medium-high	Low	Not significant
22 Portsoy	45.00	Medium-high	Low	Not significant

Analysis	km	
Max. distance where Low MoE occurred	49.0	Low + medium low
Av. Distance where Low MoE occurred	42.0	Low + medium low
Max. distance where Medium MoE occurred	34.0	Medium only
Av. distance where Medium MoE occurred	27.0	Medium only

Cumulative Effect see Chapter 15.4

Cumulative effect with other windfarms, existing, consented or applied for - worst case

(terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect (Magnitude of change)	Significance of effect (Significance of impact)
1 Duncansby Head	42.00	Medium-high	Low	Not significant
2 Keiss Pier	35.00	Medium-high	Medium-low	Not significant
3 Sortat	40.00	Medium-low	Low	Not significant
4 Wick Bay	26.00	Medium-high	Medium-low	Not significant
5 Sarclet	23.00	Medium	Low	Not significant
6 Hill O' Many Stanes	24.00	Medium-high	Medium-low	Not significant
7 Lybster (end of Main Street)	27.00	Medium-high	Medium-low	Not significant
8 Latheron (A9)	31.00	Medium-high	Medium	Significant
9 Dunbeath (nr Heritage Centre)	34.00	Medium-high	Low	Not significant
10 Berriedale (A9)	36.00	Medium-high	Medium	Significant
11 Morven	49.00	Medium-high	Medium-low	Not significant
12 Navidale	45.00	Medium-high	Medium-low	Not significant
13 Catchory	39.00	Medium	Low	Not significant
14 Minor Rd, S side Stemster Hill	34.00	Medium-low	Medium	Not significant
15 Whaligoe Steps	23.00	Medium-high	Low	Not significant
16 Lossiemouth Harbour	46.00	Medium	Low	Not significant
17 Buckie, Cliff Terrace	44.00	Medium-low	Low	Not significant
18 Portnockie - Bow Fiddle Rock	41.00	Medium-high	Low	Not significant
19 Cullen, Viaduct & cycle path	43.00	Medium-high	Low	Not significant
20 Bin Hill	46.00	Medium	Low	Not significant
21 Findlater Castle	43.00	Medium-high	Low	Not significant
22 Portsoy	45.00	Medium-high	Low	Not significant

Analysis (cumulative)	km	
Max. distance where Low MoE occurred	46.0	Low +medium low
Av. Distance where Low MoE occurred	37.6	Low +medium low
Max. distance where Medium MoE occurred	36.0	Medium only
Av. distance where Medium MoE occurred	33.7	Medium only

Scheme name	Moray West (updated 2019)		
Document	EIA Report 2018, Non Technical Summary, and Chapter 14		
Data source	Marine Scotland		
Status	Application consented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	850	1116	
No. of turbines		72-85	10 to 12 MW
Turbine blade tip height (m)		to 285m	
Distance from nearest coast km	22		

Effect

Additional effect to other existing windfarms as part of baseline (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect (Impact Magnitude)	Significance of effect (Effect Significance)
1: Duncansby Head	53	Medium-high	Low	Not-significant
2: Keiss	43	Medium-high	Negligible	Not-significant
3: Wick	32	Medium-high	Medium-low	Significant
4: Sarclet	26	Medium-high	Medium	Significant
5: Whaligoe Steps	26	Medium-high	Medium	Significant
6: Minor Road (SE of Osclay)	28	Medium	Medium	Significant
7: Lybster	25	Medium-high	Medium	Significant
8: Latheron	25	Medium-high	Medium	Significant
9a: Dunbeath	25	Medium-high	Medium	Significant
9b: Dunbeath	24	Medium-high	Medium-high	Significant
10: Morven	35	Medium-high	Medium-low	Not-significant
11: Berriedale (A9)	23	Medium-high	Medium	Significant
12: Navidale	28	Medium-high	Medium	Significant
13a: Brora	37	Medium-high	Medium-low	Not-significant
13b: Dornoch	49	Medium-high	Low	Not-significant
14: Tarbat Ness Lighthouse	37	Medium-high	Medium-low	Not-significant
15: Burghead Visitor Centre	38	Medium-high	Medium-low	Not-significant
16: Lossiemouth Harbour	32	Medium-high	Medium-low	Not-significant
17: Buckie	40	Medium-high	Medium-low	Not-significant
18: Bin Hill	43	Medium	Low	Not-significant
19 Portnockie	39	Medium-high	Medium-low	Not-significant
20: Cullen	41	Medium-high	Medium-low	Not-significant
21: Findlater Castle	42	Medium-high	Medium-low	Not-significant
22: Sandend	44	Medium-high	Low	Not-significant
23: Portsoy	50	Medium-high	Medium-low	Not-significant

Analysis	km	
Max. distance where Low MoE occurred	53.0	Low + medium low
Av. Distance where Low MoE occurred	40.8	Low + medium low
Max. distance where Medium MoE occurred	28.0	Medium only
Av. distance where Medium MoE occurred	25.8	Medium only

Cumulative Effect

Cumulative effect with other consented windfarms (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect (Cumualive Magnitude of change)	Significance of effect (Significance of Cumulative Effect)
4: Sarclet	26	Medium-high	Medium	Significant
5: Whaligoe Steps	26	Medium-high	Medium	Significant
6: Minor Road (SE of Osclay)	28	Medium	Medium	Significant
7: Lybster	25	Medium-high	Medium	Significant
8: Latheron	25	Medium-high	Medium	Significant
9a: Dunbeath	25	Medium-high	Medium	Significant
9b: Dunbeath	24	Medium-high	Medium	Significant
10: Morven	35	Medium-high	Medium-low	Significant
11: Berriedale (A9)	23	Medium-high	Medium	Significant
12: Navidale	28	Medium-high	Medium	Significant
13a: Brora	37	Medium-high	Low	Not significant
13b: Dornoch	49	Medium-high	Low	Not significant
14: Tarbat Ness Lighthouse	37	Medium-high	Low	Not significant
15: Burghead Visitor Centre	38	Medium-high	Low	Not significant
16: Lossiemouth Harbour	32	Medium-high	Low	Not significant
17: Buckie	40	Medium-high	Medium-low	Significant
18: Bin Hill	43	Medium	Medium-low	Not significant
19 Portnockie	39	Medium-high	Medium-low	Significant
20: Cullen	41	Medium-high	Medium-low	Significant
21: Findlater Castle	42	Medium-high	Medium-low	Significant
22: Sandend	44	Medium-high	Low	Not significant
23: Portsoy	50	Medium-high	Medium-low	Not significant

Analysis (cumulative)	km	
Max. distance where Low MoE occurred	50.0	Low + medium low
Av. Distance where Low MoE occurred	40.5	Low + medium low
Max. distance where Medium MoE occurred	28.0	Medium only
Av. distance where Medium MoE occurred	25.6	Medium only

Scheme name	Rampion		
Document	ES Section 12 – Seascape, Landscape & Visual Impact Assessment Dec 2012 p71+		
Data source	http://infrastructure.planninginspectorate.gov.uk		
Status	Implemented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	400		note Option F modelled in ES
No. of turbines	116	100-175 (worst case)	3.45 MW (3.6 to 7 in EA)
Turbine blade tip height (m)	140	165-210	
Distance from nearest coast km	13		

Effect

No other windfarms present (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect (magnitude of predicted visual change)	Significance of effect (level of predicted visual effect)
1 Beachy Head cliff top	22.50	Very high	Medium	Major
2 Birling Gap cliff top	19.60	Very high	Medium	Major
3 Birling Gap beach	19.60	Very high	Medium	Major
4 Seven Sisters C Park cliff top	17.80	Very high	Medium	Major
5 Seven Sisters Cuckmere Haven	18.70	Very high	Very small	Moderate
6 Seaford Head cliff top	15.70	Very high	Medium	Major
7 Seaford sea front promenade	15.50	High	Medium	Major-moderate
8 Newhaven Coastguard cliff top	14.60	Medium	Medium	Moderate
9 Peacehaven cliff top	13.90	High	Large	Major
10 Beacon Hill, Rottingdean	14.10	High	Large	Major
11 Brighton parade	14.20	High	Large	Major
12 Brighton sea front promenade	14.10	High	Large	Major
13 Shoreham/A259 coastal road	14.20	High	Medium	Major-moderate
14 Worthing sea front promenade	13.40	High	Large	Major
15 Littlehampton sea front	17.80	High	Medium	Major-moderate
16 Bognor Regis sea front	23.90	High	Small	Moderate
17 Pagham beach	28.20	High	Small	Moderate
18 Selsey sea front promenade	29.50	High	Small	Moderate
19 Willingdon Hill	24.00	High	Medium	Major-moderate
20 Firle Beacon	21.60	Very high	Medium	Major
21 Saxon Down	24.10	High	Small	Moderate
22 Hollingbury Golf Course	18.10	Very high	Medium	Major
23 Ditchling Beacon ridge	23.60	High	Medium	Major-moderate
24 Devil's Dyke	19.60	Very high	Large	Major
25 Upper Beeding	19.80	Medium	Very small	Minor-negligible
26 Cissbury Ring	18.90	Very high	Medium	Major
27 Highdown Hill	16.80	High	Large	Major
28 Springhead Hill	25.40	High	Medium	Major-moderate
29 Bignor Hill	30.00	Very high	Medium	Major-moderate

Analysis	km	
Max. distance where Low MoE occurred	29.5	Low = 'Small' only
Av. Distance where Low MoE occurred	26.4	Low = 'Small' only
Max. distance where Medium MoE occurred	30.0	Medium only
Av. distance where Medium MoE occurred	19.9	Medium only

Cumulative Effect

Cumulative effect with other windfarms, either existing or proposed (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect (cumulative magnitude of visual change)	Significance of effect (level and significance of cumulative visual effect)
19 Willingdon Hill	24.00	High	Medium (no effect)	Major-moderate (no effect)
20 Firle Beacon	21.60	Very high	Medium (no effect)	Major (no effect)
21 Saxon Down	24.10	High	Small (no effect)	Moderate (no effect)

Analysis (cumulative)	km	
Max. distance where Low MoE occurred	24.10	Low = Small
Av. Distance where Low MoE occurred	24.10	Low = Small
Max. distance where Medium MoE occurred	24.00	
Av. distance where Medium MoE occurred	22.80	

Scheme name	Seagreen Alpha and Bravo			
Document	EIA 2018, Non Technical Summary, and Chapter 13 Seascape, Landscape and Visual Amenity.			
Data source	Marine Scotland			
Status	Consented			

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW		1500 MW	
No. of turbines		up to 120	estimate from capacity/no: 12.5 MW
Turbine blade tip height (m)		280	
Distance from nearest coast km		27	

Effect

Additional effect to other existing windfarms as part of baseline (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect (Magnitude of impact)	Significance of effect (Significance of impact)
1 Garron Point	38	Medium	Low-medium	Moderate-minor
2 Beach Road, Kirkton	32	High-medium	Medium	Major-moderate
3 White Caterthun Hill Fort	52	High	Low-very low	Moderate-minor
4 Montrose	33	High-medium	Low-medium	Moderate
5 Braehead of Lunan	35	High-medium	Medium-low	Major-moderate
6 Arbroath Signal Tower	40	High	Low-very low	Moderate-minor
7 Carnoustie	49	High-medium	Low-very low	Minor
8 Fife Ness, Lochaber Rock	50	High	Very low	Minor-negligible
9 North Berwick Law	73	High	Very low	Minor-negligible
10 Pinderachy	61	High	Low-very low	Moderate-minor
11 The Geot/Ben Tirran	71	High	Low-very low	Moderate-minor
12 Isle of May	55	High-medium	Very low	Minor-negligible
13 Bell Rock Lighthouse	30	High	Low-very low	Moderate-minor

Analysis	km	
Max. distance where Low MoE occurred	38.0	Low + Low-medium
Av. Distance where Low MoE occurred	35.3	Low + Low-medium and Medium-low
Max. distance where Medium MoE occurred	32.0	Medium only
Av. distance where Medium MoE occurred	32.0	Medium only

Cumulative Effect

Cumulative effect with other windfarms, either existing or proposed (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect (Magnitude of impact)	Significance of effect (Impact Significance)
1 Garron Point	38	Medium		Minor
2 Beach Road, Kirkton	32	High-medium		Moderate
3 White Caterthun Hill Fort	52	High		Minor
4 Montrose	33	High-medium		Moderate-minor
5 Braehead of Lunan	35	High-medium		Moderate
6 Arbroath Signal Tower	40	High		Minor
7 Carnoustie	49	High-medium		Minor
8 Fife Ness, Lochaber Rock	50	High		Minor-negligible
9 North Berwick Law	73	High		Minor-negligible
10 Pinderachy	61	High		Moderate-minor
11 The Geot/Ben Tirran	71	High		Moderate-minor
12 Isle of May	55	High-medium		Minor-negligible
13 Bell Rock Lighthouse	30	High		Moderate-minor

Analysis (cumulative)	km	
Max. distance where Low MoE occurred		No data
Av. Distance where Low MoE occurred		No data
Max. distance where Medium MoE occurred		No data
Av. distance where Medium MoE occurred		No data

Scheme name	Sheringham Shoal		
Document	ES May 2006		
Data source	http://sheringhamshoal.co.uk		
Status	Implemented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	317		
No. of turbines	88		3.6 MW
Turbine blade tip height (m)	135	117, 142 and 172	note they consider visual effect similar
Distance from nearest coast km	17		

Effect

No other windfarms taken into consideration (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect (Magnitude of impact)	Significance of effect (Significance of impact)
1 Cromer Pier	19.00	High	Medium	Moderate
2 Wells-Next-The Sea	25.00	High	Low	Minor
3 Beeston Hill	17.00	High	High	Major
4 Viewpoint in Oak Wood	19.00	High	Medium	Moderate
5 Cley Marshes Nature Reserve	18.00	High	High	Major
6 Overstrand, car park	21.00	High	Medium	Moderate
7 Incleborough Hill	18.50	High	Medium	Moderate
8 Sheringham, Peddars Way	17.00	High	High	Major
9 Sheringham Coast Watch – hut	17.00	Medium	High	Moderate
10 Weybourne, Peddars Way	17.00	High	Medium	Moderate
11 Holgate Hill	19.00	Medium	Medium	Moderate
12 A148, crossroads near Bale	27.50	Medium	n/a	Negliglible
13 Blakeney, car park	19.50	High	Medium	Moderate
14 Morston – car park	21.00	High	Medium	Moderate
15 Stiffkey Salt Marshes	22.00	High	Low	Minor
16 A149 St Withburga Church	27.50	Medium	n/a	Negliglible
17 Beeston Regis Heath	19.00	Medium	Medium	Minor
18 Dead Man's Hill	17.00	Medium	High	Moderate
19 Muckleburgh Hill	18.00	Medium	High	Moderate
20 Holt, church	23.00	High	n/a	Negliglible
21 West Beckham	21.50	Low	n/a	Negliglible
22 A148	25.00	Medium	n/a	Negliglible
23 Holkham Park	28.00	High	n/a	Negliglible
24 Beacon Hill Road	32.00	High	n/a	Negliglible
25 Gibraltar Point Viewpoint	35.00	High	n/a	Negliglible
26 Passenger Ferry	5.00	m	High	Moderate

Analysis	km	
Max. distance where Low MoE occurred	25.0	Low only
Av. Distance where Low MoE occurred	23.5	Low only
Max. distance where Medium MoE occurred	21.0	Medium only
Av. distance where Medium MoE occurred	19.2	Medium only

Cumulative Effect

Incl proposed schemes at Cromer and Docking Shoal/Race Bank (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect (Magnitude of impact)	Significance of effect (Significance of impact)
1 Cromer Pier	19.00	High	not defined	Moderate
2 Wells-Next-The Sea	25.00	High	not defined	Minor
18 Dead Man's Hill	17.00	Medium	not defined	Moderate

Analysis (cumulative)	km	
Max. distance where Low MoE occurred		no data
Av. Distance where Low MoE occurred		no data
Max. distance where Medium MoE occurred		no data
Av. distance where Medium MoE occurred		no data

Scheme name	Thanet		
Document	Thanet Offshore Wind Farm ES Chapter 13.6		
Data source			
Status	Implemented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	300		
No. of turbines	100	60-100	3 MW
Turbine blade tip height (m)	115	150	
Distance from nearest coast km	11		

Effect

Other windfarms present or planned are not taken into consideration (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect (Magnitude of impact)	Significance of effect (Significance of impact)
Reculver Country Park	27.7	Low to Medium	Low	Minor
West Brook POS / Coastal Path	17.5	Medium	Medium	Moderate
Margate Harbour Wall	15.4	Medium	Low	Minor
Kingsgate / North Foreland	12.3	High	Medium to High	Moderate
Broadstairs Promenade	14.2	Medium to High	Medium to High	Moderate
Wellington Crescent, Ramsgate	16.6	Medium	Medium to Low	Minor to Moderate
Richborough Castle	24.5	Medium to Low	Negligible	Negligible
Kings Avenue / Princes Drive	23.5	Medium	Low to Medium	Minor to Moderate
Deal Pier / Promenade	25.6	Medium	Low to Medium	Minor to Moderate
St Margaret's at Cliffe	33	High	Low to Negligible	Minor

Analysis	km	
Max. distance where Low MoE occurred	27.7	Low + Low to medium +Medium to low
Av. Distance where Low MoE occurred	21.8	Low + Low to medium +Medium to low
Max. distance where Medium MoE occurred	17.5	Medium only
Av. distance where Medium MoE occurred	17.5	Medium only

Combined Cumulative Effect

Cumulative effect with other windfarms (Kentish Flats) (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect (Magnitude of cumulaitve impact)	Significance of effect (Impact significance)
Reculver Country Park	27.7	Low to Medium	Minor	Minor to moderate
West Brook POS / Coastal Path	17.5	Medium	Medium	Moderate
Margate Harbour Wall	15.4	Medium	Minor	Minor to moderate
Kingsgate / North Foreland	12.3	High	Medium	Moderate

Analysis (cumulative)	km	
Max. distance where Low MoE occurred	27.7	Low = 'Minor'
Av. Distance where Low MoE occurred	21.6	Low = 'Minor'
Max. distance where Medium MoE occurred	27.7	Medium only
Av. distance where Medium MoE occurred	14.9	Medium only

Scheme name	Thanet extension		
Document	ES Vol 2 Chapter 1: Project Description (Offshore) 2018 and Vol 2 Chapter 12: SLVIA		
Data source	National Infrastructure Planning		
Status	Application submitted		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW		340	
No. of turbines		34	8-12 MW, possibly larger
Turbine blade tip height (m)		upto 250	
Distance from nearest coast km		8	

Effect

Additional effect to other existing windfarms as part of baseline (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity to change)	Magnitude of effect (Magnitude of change)	Significance of effect (Significant effects)
Reculver Country Park, Thanet Coastal Path	24.7	Medium-high	Medium-low	Not significant
West Brook POS (Margate)/Thanet Coastal P	14.2	Medium	Medium-high	Significant
Margate Harbour Wall (Turner Arts Gallery)	12.2	Medium	Medium	Not significant
Kingsgate/North Foreland, Coastal Path	8.7	High	High	Significant
Broadstairs Promenade	10.5	High	High	Significant
Wellington Crescent, Ramsgate	13.3	Medium	Medium-high	Significant
King's Avenue/Princes Drive, Sandwich Bay	19.9	Medium-high	Medium	Significant
Richborough Castle	22.8	Medium-high	Medium-low	Not significant
Joss Bay/North Foreland	8.7	High	High	Significant
Stone Bay	9.8	High	High	Significant
Foreness Point/Palm Bay	9.1	High	High	Significant
Walpole Bay (Margate)	11.5	Medium-high	Medium-high	Significant
Birchington-on-Sea	17.8	Medium-high	Medium	Significant
Manston Road, Isle of Thanet	14.6	Medium-high	Medium	Significant
Broadstairs, Dumpton Gap	11.1	High	High	Significant
England Coastal Path, Sandwich Flats	18.0	Medium	Medium-low	Not significant
St Peter's Church, Sandwich	21.9	Medium-high	Medium-low	Not significant
Leysdown-on-Sea	44.1	Medium	Low	Not significant

Analysis	km	
Max. distance where Low MoE occurred	44.1	Low + medium low
Av. Distance where Low MoE occurred	26.3	Low + medium low
Max. distance where Medium MoE occurred	19.9	Medium only
Av. distance where Medium MoE occurred	16.1	Medium only

Cumulative Effect

Cumulative effect with other projects (not windfarms), either existing or proposed (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect (Magnitude of change)	Significance of effect (Significance of impact)
Reculver Country Park, Thanet Coastal Path	24.7	Medium-high		No visibility of cumulative projects
West Brook POS (Margate)/Thanet Coastal P	14.2	Medium		No visibility of cumulative projects
Margate Harbour Wall (Turner Arts Gallery)	12.2	Medium		No visibility of cumulative projects
Kingsgate/North Foreland, Coastal Path	8.7	High		No visibility of cumulative projects
Broadstairs Promenade	10.5	High		No visibility of cumulative projects
Wellington Crescent, Ramsgate	13.3	Medium	Low	Not significant
King's Avenue/Princes Drive, Sandwich Bay	19.9	Medium-high	Low	Not significant
Richborough Castle	22.8	Medium-high	Medium-low	Not significant
Joss Bay/North Foreland	8.7	High		No visibility of cumulative projects
Stone Bay	9.8	High		No visibility of cumulative projects
Foreness Point/Palm Bay	9.1	High		No visibility of cumulative projects
Walpole Bay (Margate)	11.5	Medium-high		No visibility of cumulative projects
Birchington-on-Sea	17.8	Medium-high		No visibility of cumulative projects
Manston Road, Isle of Thanet	14.6	Medium-high		No visibility of cumulative projects
Broadstairs, Dumpton Gap	11.1	High		No visibility of cumulative projects
England Coastal Path, Sandwich Flats	18.0	Medium	Low	Not significant
St Peter's Church, Sandwich	21.9	Medium-high	Medium-low	Not significant
Leysdown-on-Sea	44.1	Medium		No visibility of cumulative projects

Analysis (cumulative)	km	
Max. distance where Low MoE occurred	22.8	Low + medium low
Av. Distance where Low MoE occurred	18.5	Low + medium low
Max. distance where Medium MoE occurred		No data
Av. distance where Medium MoE occurred		No data

Scheme name	Walney Phase 1		
Document	Walney Offshore Windfarm ES Part 2		
Data source			
Status	Implemented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	186		
No. of turbines	51	93	3.6 MW
Turbine blade tip height (m)	137	202	
Distance from nearest coast km	15		

Effect

Additional effect to other existing windfarms as part of baseline (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect (Magnitude of impact)	Significance of effect (Significance of impact)
St Bees Head	42.6	High	Negligible	Negligible/Nil
Seascale Beach	31.3	High (Residents)	Very Small	Minor
Bootle Fell	27.6	Medium	Very Small	Minor/Negligible
Black Combe	23.4	High	Small	Moderate/Minor
Coastal Path, Haverigg	18.8	High	Medium	Moderate/Minor
A593 Broughton in Furness	36.4	Medium	Negligible	Nil
A595 Kirkby in Furness	25.1	Medium	Very Small	Minor/Negligible
Hoad Monument, Ulverston	30.5	High	Negligible	Negligible/Nil
High Haume Farm	23	High	Small	Moderate/Minor
Biggar Bank, Walney	14.4	High (Residents)	Medium	Moderate
South WalneyNature Reserve	16.2	High	Medium	Moderate
Birkrigg Fell	26.8	High	Very Small	Minor
Humphrey Head	36.4	High	Negligible	Negligible/Nil
Morecambe Stone Pier	37.7	High	Negligible	Negligible/Nil
Heysham Head	35.6	High	Negligible	Negligible/Nil
Rossall Point, Fleetwood	28.9	High	Very Small	Minor
Blackpool Tower	35.2	High	Negligible	Negligible/Nil

Analysis	km	
Max. distance where Low MoE occurred	23.4	Low = 'Small'
Av. Distance where Low MoE occurred	23.2	Low = 'Small'
Max. distance where Medium MoE occurred	18.8	Medium only
Av. distance where Medium MoE occurred	16.5	Medium only

Cumulative Effect

In Walney ES 1.0 notes that:
Walney and West of Duddon Sands are assessed as a single entity,
and assessed in context of several other proposed windfarms on the Eastern Irish Sea.

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect (Magnitude of change)	Significance of effect (Significance of visual effect)
St Bees Head	42.6	High	Negligible	Negligible
Coastal Path, Haverigg	18.8	High	Large	Major
South WalneyNature Reserve	16.2	High	Large	Major
Biggar Bank, Walney	14.4	High (Residents)	Major	Major- moderate
Black Combe	23.4	High	Medium	Moderate
High Haume Farm	23	High	Medium	Moderate
Rossall Point, Fleetwood	28.9	High	Medium	Moderate
Blackpool Tower	35.2	High	Medium	Moderate
Bootle Fell	27.6	Medium	Small	Minor
A595 Kirkby in Furness	25.1	Medium	Small	Minor
Birkrigg Fell	26.8	High	Small	Moderate -minor
Seascale Beach	31.3	High (Residents)	Very small	Minor
A593 Broughton in Furness	36.4	Medium	Very small	Minor
Hoad Monument, Ulverston	30.5	High	Very small	Minor
Humphrey Head	36.4	High	Very small	Minor - negligible
Morecambe Stone Pier	37.7	High	Very small	Minor - negligible
Heysham Head	35.6	High	Very small	Minor - negligible

Analysis (cumulative)	km	
Max. distance where Low MoE occurred	27.6	Low = 'Small'
Av. Distance where Low MoE occurred	26.5	Low = 'Small'
Max. distance where Medium MoE occurred	35.2	Medium only
Av. distance where Medium MoE occurred	27.6	Medium only

Scheme name	Walney Extension		
Document	Environmental Statement Volume 1 Chapter 19 Seascape, landscape and visual impact assessment June 2013 p.69+		
Data source	http://infrastructure.planninginspectorate.gov.uk/projects/north-west/walney-extension-offshor		
Status	Implemented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	659		
No. of turbines	87	93-207	8.25 MW
Turbine blade tip height (m)	222	142-222	
Distance from nearest coast km	19		

Effect

Additional effect to other existing windfarms as part of baseline (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect (Magnitude of impact)	Significance of effect
1 St Bees head	39.56	High	Low-negligible	Minor
2 Thornhill	39.15	Low	Low-negligible	Negligible
3 Seascale beachfront	33.78	High-medium	Low-negligible	Minor
4 Seafront at Ravenglass	32.33	High	Low	Moderate
5 Black Combe, Bootle fell	27.79	High	Medium-low	Major-moderate to moderate
6 Coastal path Silecroft	24.29	High	Low	Moderate
7 Public footpath NW Milcom	28.18	High	Low-negligible	Minor
8 Askam in Furness	29.06	High	Negligible	Negligible
9 Biggar Bank Rd Walney Island	20.75	High	Low	Moderate
10 South End Haws Walney Island	22.69	High	Low	Moderate
11 Morecambe Stone Pier	44.06	High	None	None
12 Rossal Point Fleetwood	34.46	Medium	Negligible	Negligible
13 Blackpool promenade	38.98	High	Negligible-none	Negligible-none
14 Douglas Head Isle of Man	35.94	High	Negligible	Negligible
15 Loch promenade Douglas	36.66	High-medium	Negligible	Negligible
16 Snaefell Isel of Man	38.28	High	Negligible	Negligible
17 Maughold, Isle of Man	31.29	High	Low-negligible	Negligible

Analysis	km	
Max. distance where Low MoE occurred	32.3	Low + Medium-low
Av. Distance where Low MoE occurred	25.6	Low + Medium-low
Max. distance where Medium MoE occurred		Medium only - no data
Av. distance where Medium MoE occurred		Medium only - no data

Cumulative Effect

Cumulative effect with other windfarms, either existing or proposed (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor	Magnitude of effect (combined effect offshore)	Significance of effect
3 Seascale beachfront	33.78	High-medium	Low-negligible	Minor
5 Black Combe, Bootle fell	27.79	High	Medium	Major-moderate
9 Biggar Bank Rd Walney Island	20.75	High	Low	Moderate
12 Rossal Point Fleetwood	34.46	Medium	Negligible	Negligible
17 Maughold, Isle of Man	31.29	High	Medium	Major-moderate

Analysis (cumulative)	km	
Max. distance where Low MoE occurred	20.8	Low only
Av. Distance where Low MoE occurred	20.8	Low only
Max. distance where Medium MoE occurred	31.3	Medium only
Av. distance where Medium MoE occurred	29.5	Medium only

Scheme name	Westermost Rough A		
Document	Seascape and Visual Assessment February 2009 p38		
Data source	http://www.marinedataexchange.co.uk		
Status	Implemented		

Windfarm details	as built or consented	as assessed in ES/SLVIA	Notes eg turbine types
Total turbine capacity MW	210		
No. of turbines	35	35 to 110	6 MW
Turbine blade tip height (m)	177	112 to 172	
Distance from nearest coast km	8		

Effect

No other windfarms present or taken into consideration (terminology in brackets if different in document)

Viewpoint	Distance (km) from turbine	Sensitivity of receptor (Sensitivity)	Magnitude of effect (Magnitude of impact)	Significance of effect (Significance of impact)
1 Spurn Head Bird Obervatory	17.50	Medium-high	Medium	Moderate
2 Seaside Road / Central Promenade, Withernsea	8.10	Medium	Medium-high	Moderate
3 Layby on Pilmar Lane, Roos	10.60	Medium-low	Medium-low	Moderate-minor
4 East Newton Road, Aldbrough	13.00	High	Medium	Moderate-major
5 North End Marine Drive / Eastgate, Hornsea	20.00	Medium-low	Low-medium	Minor-moderate
6 Viewing Point, North Harbour, Bridlington	35.00	Low-medium	Low-negligible	Minor-negligible
7 PROW, South Landing, Flamborough Head	34.50	Medium-high	Low-negligible	Minor
8 North Road, Halsham	12.50	Low	Low-medium	Minor-moderate
9 Stonebridge Car Park, Donna Nook	32.60	Low-medium	Low	Minor

Analysis	km	
Max. distance where Low MoE occurred	32.6	Low + Medium-low + Low-medium
Av. Distance where Low MoE occurred	18.9	Low + Medium-low + Low-medium
Max. distance where Medium MoE occurred	17.5	Medium only
Av. distance where Medium MoE occurred	15.3	Medium only

Combined Cumulative Effect no data found

From ES: "Three potential sources for cumulative effect have been identified. These include the operational wind farms at Out Newton and Hull Waste Water Treatment Works, the consented wind farm at Lisset Airfield (onshore) and those registered 'in planning' which includes the Humber Gateway (Round 2 offshore) and the onshore wind farm at Burton Pidsea."

Appendix E1 Wireline detailed analysis results

OESEA 4 Offshore wind farms – visual buffers

Wirelines assessment brief

Two landscape architects with experience in assessing wind farm development will assess the scale/size of effects of the wireframes separately using the definitions set out in DTI [2005] below, but ignoring the comments in relation to characteristics of any given seascape. Both assessments will be included in the report to illustrate where there is agreement or a range of evaluations.

Tasks

- Print out single windfarm wireframes at A3 and cumulative scenarios at A1 width
- Hold at the recommended viewing distance in an arc so all the paper image is at the same distance from your eyes.
- Make a judgement on the scale of effect for each scenario based on the DTI (2005) study magnitude of change table 5 below.
- Write down each judgement in the table provided overleaf
- Note comments about the process or limitations as separate text.

Table 5: Magnitude of change: names, descriptors and definitions

Magnitude	Name	Descriptors - appearance in central vision field	Definition
Very Large	Dominant	Commanding, controlling the view, foremost feature, prevailing, overriding.	Proposed offshore wind farm causes very large alteration to key elements/features/characteristics of the baseline seascape or visual conditions (pre-development) such that there is a fundamental change.
Large	Prominent	Standing out, striking, sharp, unmistakeable, easily seen	Proposed offshore wind farm causes large alteration to key elements/ features/ characteristics of the baseline seascape or visual conditions (pre-development) such that there is an unmistakeable change.
Moderate	Conspicuous	Noticeable, distinct, catching the eye or attention, clearly visible, well defined	Proposed offshore wind farm causes moderate alteration to elements/features/characteristics of the baseline seascape or visual conditions (pre-development) such that there is a distinct change.
Small	Apparent	Visible, evident, obvious, perceptible, discernible, recognisable.	Proposed offshore wind farm causes small loss or alteration to elements/features/ characteristics of the baseline seascape or visual conditions (pre-development) such that there is a perceptible change.
Very Small	Inconspicuous	Lacking sharpness of definition, not obvious, indistinct, not clear, obscure, blurred, indefinite, subtle	Proposed offshore wind farm causes very small loss or alteration to elements/ features/ characteristics of the baseline seascape or visual conditions (pre-development) such that there is a barely distinguishable change.
Negligible	Faint	Weak, not legible, near limit of acuity of human eye	Proposed offshore wind farm causes negligible loss or alteration to elements/ features/ characteristics of the baseline seascape or visual conditions (pre-development) such that there is no legible change.

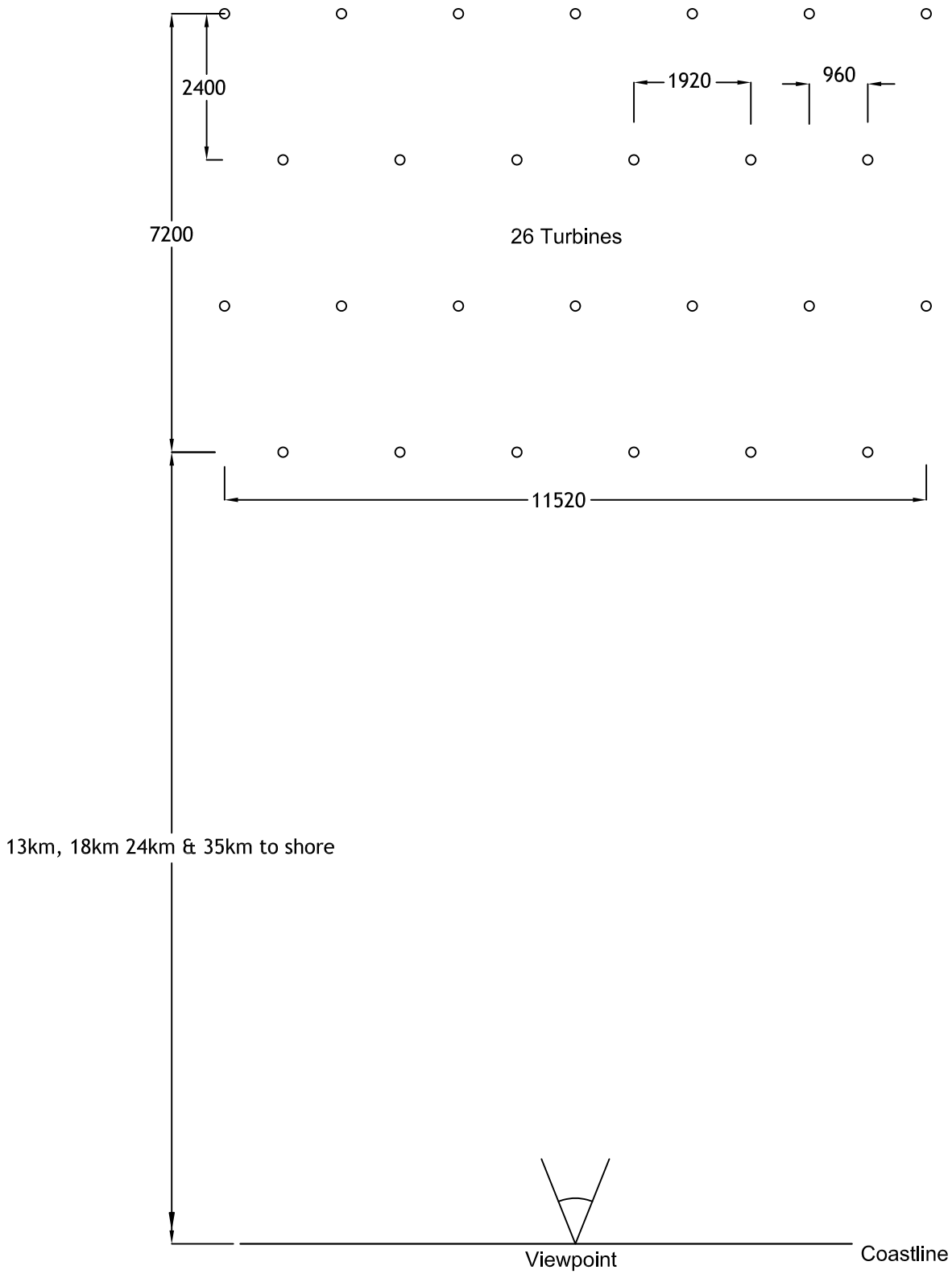
	Scale of change/effect	
Wireline Scenarios	**Landscape Architect A**	**Landscape Architect B**
Single large wind farm (Individual wind farm scenarios)		
350m high turbines at 13km from 6m elev	Very large/large	Very Large
400m high turbines at 13km from 6m elev	Very large/large	Large
350m high turbines at 24km from 6m elev	Moderate	Moderate
400m high turbines at 24km from 6m elev	Moderate	Moderate
350m high turbines at 35km from 6m elev	Small*	Small
400m high turbines at 35km from 6m elev	Small*	Small
350m high turbines at 44km from 6m elev	Very small*	Very small
400m high turbines at 44km from 6m elev	Very small*	Very small
350m high turbines at 13km from 22m elev	Very large/large	Very Large
400m high turbines at 13km from 22m elev	Very large/large	Very Large
350m high turbines at 24km from 22m elev	Moderate	Moderate
400m high turbines at 24km from 22m elev	Moderate	Moderate
350m high turbines at 35km from 22m elev	Small*	Small
400m high turbines at 35km from 22m elev	Small*	Small
350m high turbines at 44km from 22m elev	Very small*	Very small
400m high turbines at 44km from 22m elev	Very small*	Very small
350m high turbines at 13km from 100m elev	Very large/large	Very Large
400m high turbines at 13km from 100m elev	Very large/large	Very Large
350m high turbines at 24km from 100m elev	Moderate	Moderate
400m high turbines at 24km from 100m elev	Moderate	Moderate
350m high turbines at 35km from 100m elev	Small*	Small
400m high turbines at 35km from 100m elev	Small*	Small
350m high turbines at 44km from 100m elev	Very small*	Very small
400m high turbines at 44km from 100m elev	Very small*	Very small
500MW wind farm scenarios		
350m high turbines at 13km from 22m elev	Large	Very Large
400m high turbines at 13km from 22m elev	Large	Very Large
350m high turbines at 18km from 22m elev	Large	Large
400m high turbines at 18km from 22m elev	Large	Very Large
350m high turbines at 24km from 22m elev	Moderate	Moderate
400m high turbines at 24km from 22m elev	Moderate	Large
350m high turbines at 35km from 22m elev	Small	Small
400m high turbines at 35km from 22m elev	Small	

Wireframe Scenarios	Landscape Architect A	Landscape Architect B
	Scale of effect	Scale of effect
Cumulative scenarios		
20MW/350m (24km), 10MW/220m and 3.6MW/147m high turbine arrays	Very large**	Very Large
20MW/350m (35km), 10MW/220m and 3.6MW/147m high turbine arrays	Very large**	Large
20MW/350m, 20MW/350m and 3.6MW/147m high turbine arrays	Very large** (worst scenario)	Very Large

*Worst case – depends on good light and limited visibility modifiers (excellent visibility).

** Very confused and unbalanced composition with turbines becoming the dominant seascape characteristic

Appendix E2 Wireline wind farm scenario plans

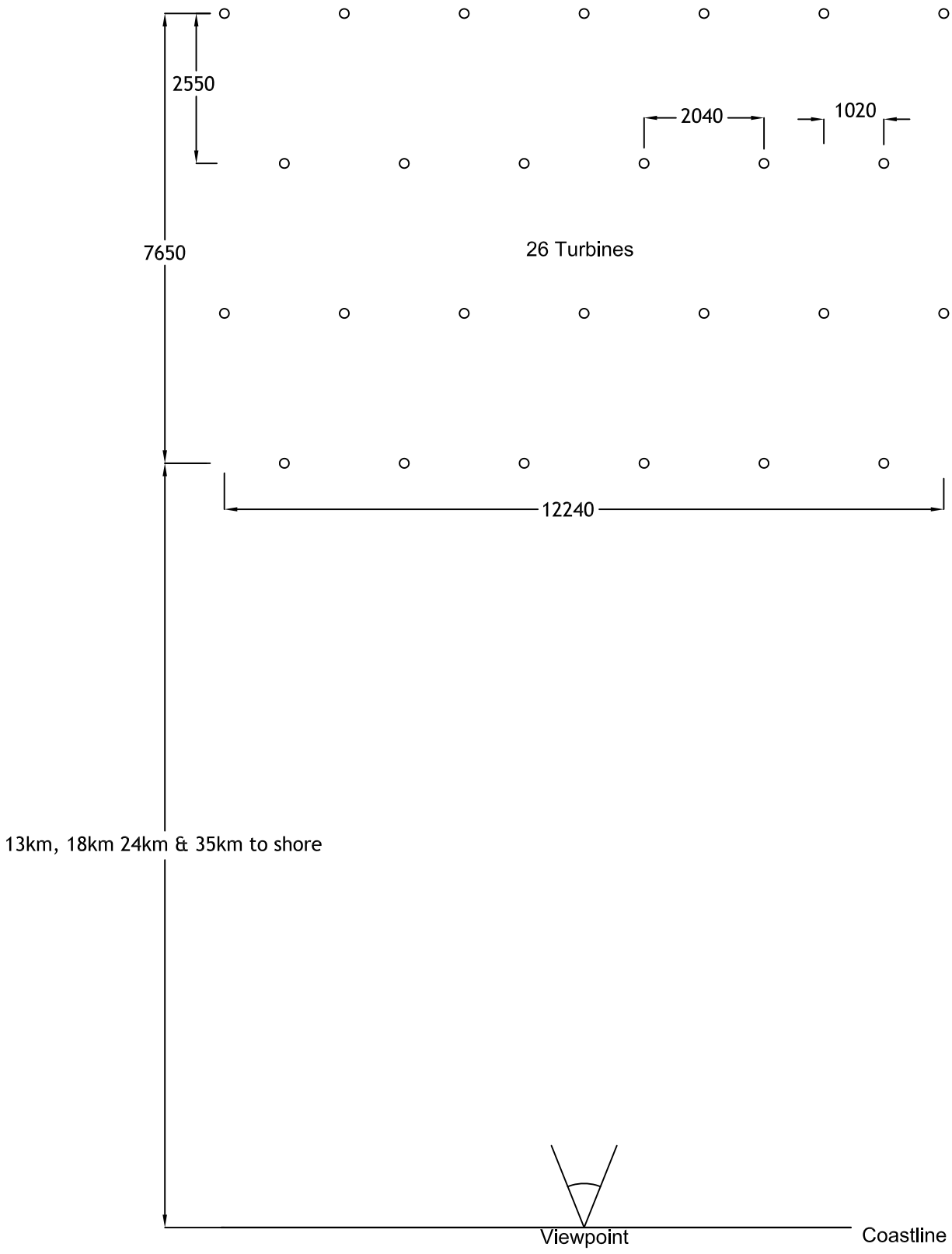


All Dimensions in metres
unless otherwise stated

Plan View
Scale 1: 100,000

Figure x
350m High 520MW Comparison Scenario

www.whiteconsultants.co.uk



All Dimensions in metres
unless otherwise stated

Plan View
Scale 1: 100,000

Figure x
400m High 520MW Comparison Scenario

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Appendix E3 Wirelines- 500MW wind farm with 350m and 400m high turbines

350m high turbines

400m high turbines

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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Viewing distance: 51cm for A3 sheet, 72cm for A2, 102cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast**
Horizontal angle of view: Cylindrical Projection 45 degrees	Height to hub: 190m & 230m	Version: 1	**20MW turbines at 13km viewed from 22m elevation**
Distance to horizon: 18.1km	Number of turbines: 26	Drawn: TM	**Figure x**
	Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	

350m high turbines

400m high turbines

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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Viewing distance: 51cm for A3 sheet, 72cm for A2, 102cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast**
	Height to hub: 190m & 230m	Version: 1	**20MW turbines at 18km viewed from 22m elevation**
Horizontal angle of view: Cylindrical Projection 45 degrees	Number of turbines: 26	Drawn: TM	**Figure x**
Distance to horizon: 18.1km	Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	

350m high turbines

400m high turbines

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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Viewing distance: 51cm for A3 sheet, 72cm for A2, 102cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast**
Horizontal angle of view: Cylindrical Projection 45 degrees	Height to hub: 190m & 230m	Version: 1	**20MW turbines at 24km viewed from 22m elevation**
Distance to horizon: 18.1km	Number of turbines: 26	Drawn: TM	**Figure x**
	Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	

350m high turbines

400m high turbines

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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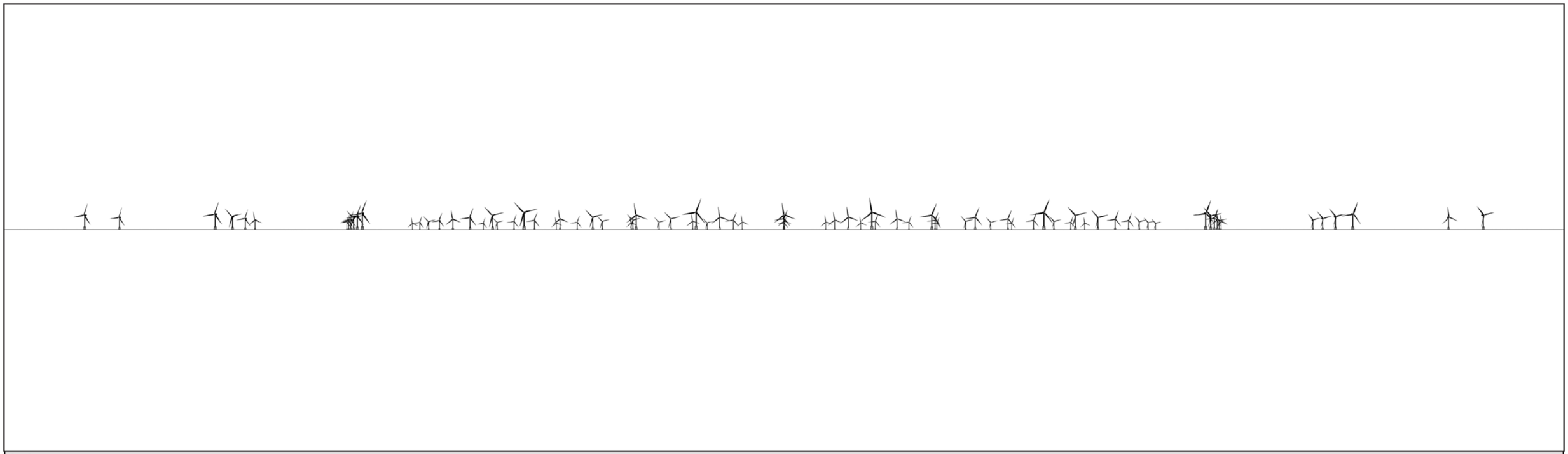
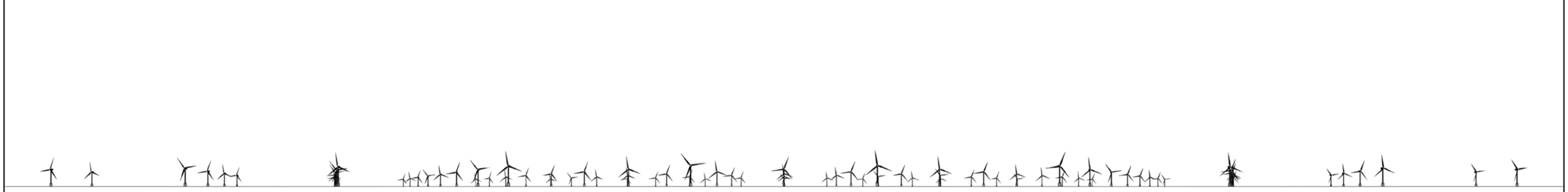
Viewing distance: 51cm for A3 sheet, 72cm for A2, 102cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast**
	Height to hub: 190m & 230m	Version: 1	**20MW turbines at 35km viewed from 22m elevation**
Horizontal angle of view: Cylindrical Projection 45 degrees	Number of turbines: 26	Drawn: TM	**Figure x**
Distance to horizon: 18.1km	Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	

Appendix E4 Wirelines- Large wind farm with 350m and 400m high turbines



350m high turbines



400m high turbines

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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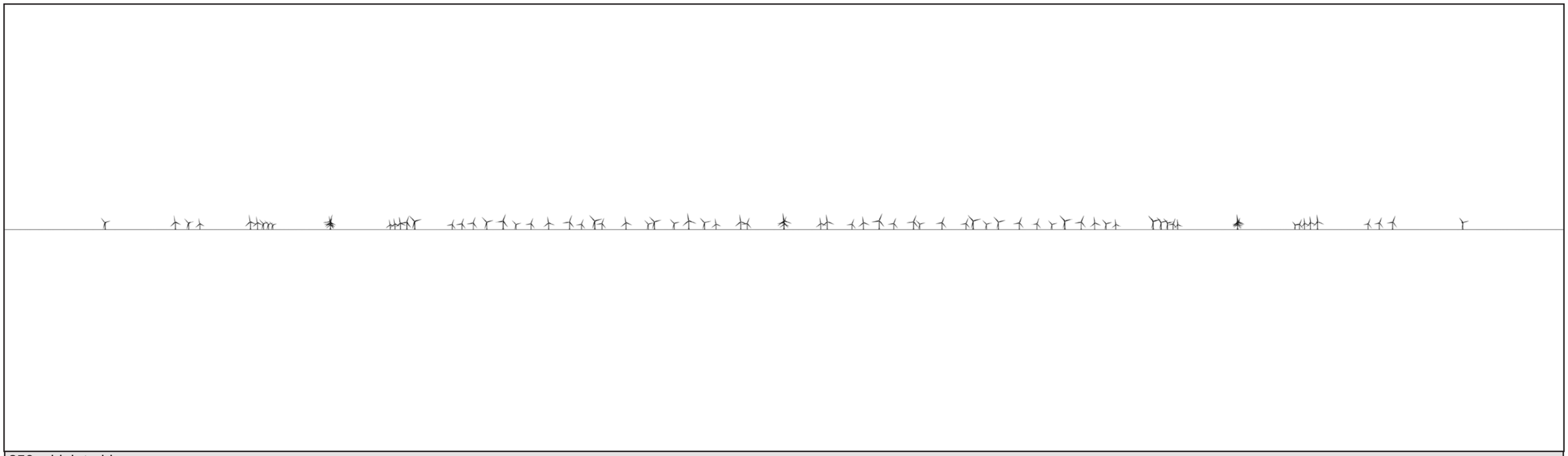
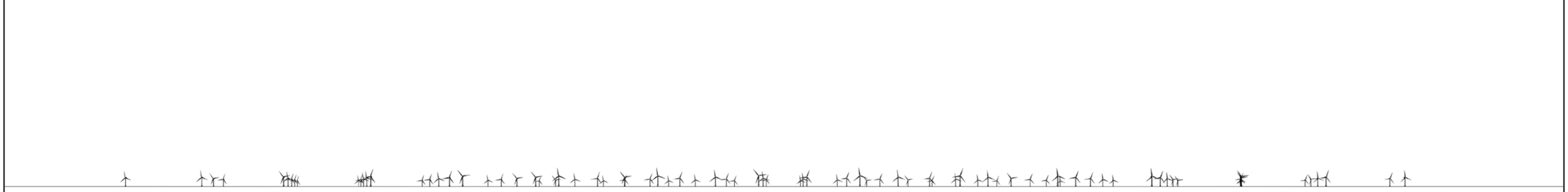
Viewing distance: 30cm for A3 sheet, 43cm for A2, 61cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast**
	Height to hub: 190m & 230m	Version: 1	**20MW turbines at 13km viewed from 6m elevation**
Horizontal angle of view: Cylindrical Projection 75 degrees	Number of turbines: 84	Drawn: TM	**Figure x**
Distance to horizon: 9.4km	Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	



350m high turbines



400m high turbines

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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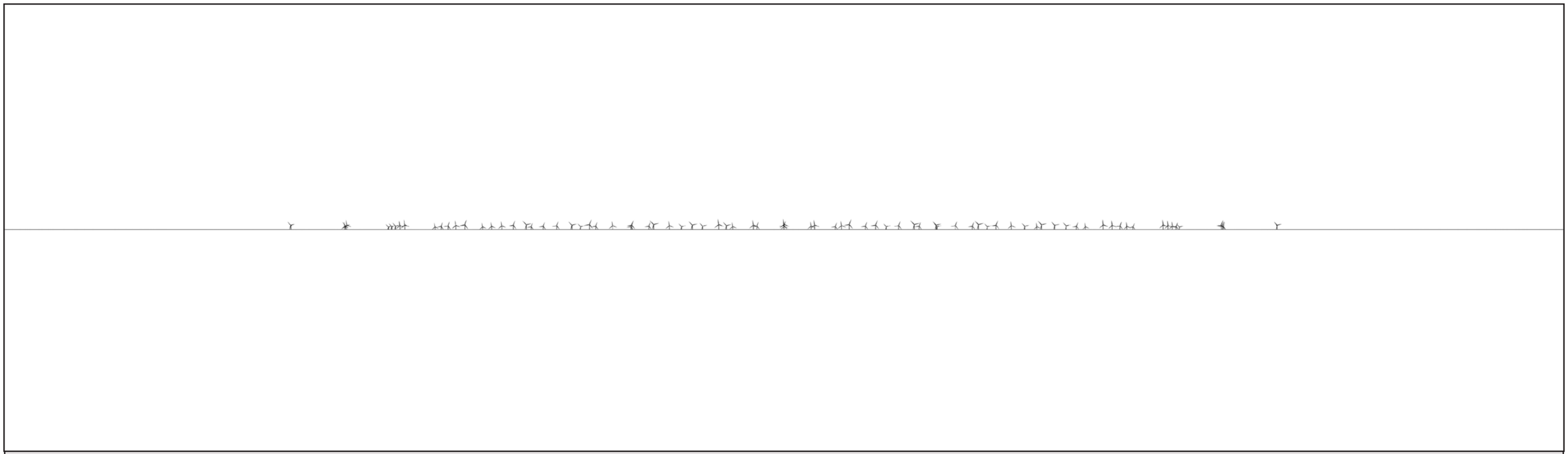
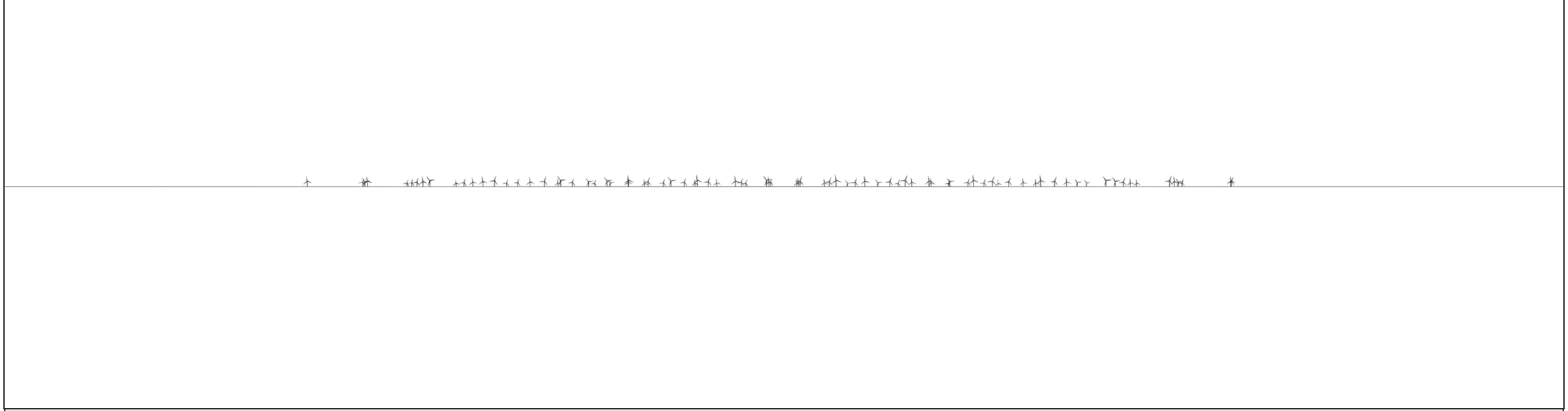
Viewing distance: 30cm for A3 sheet, 43cm for A2, 61cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast**
	Height to hub: 190m & 230m	Version: 1	**20MW turbines at 24km viewed from 6m elevation**
Horizontal angle of view: Cylindrical Projection 75 degrees	Number of turbines: 84	Drawn: TM	**Figure x**
Distance to horizon: 9.4km	Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	



350m high turbines



400m high turbines

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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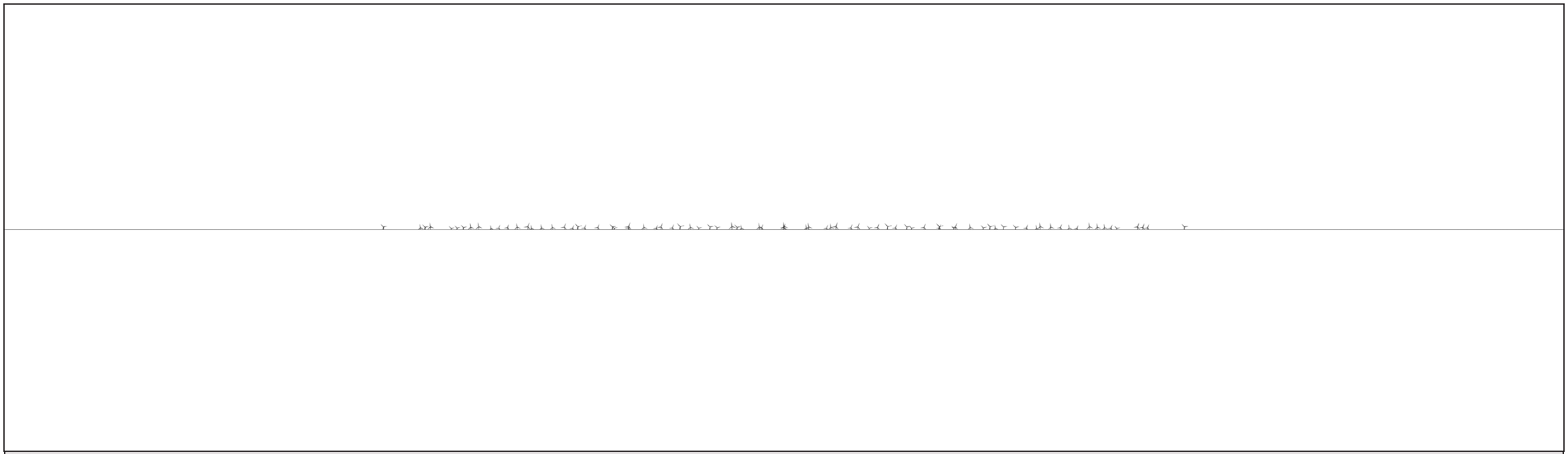
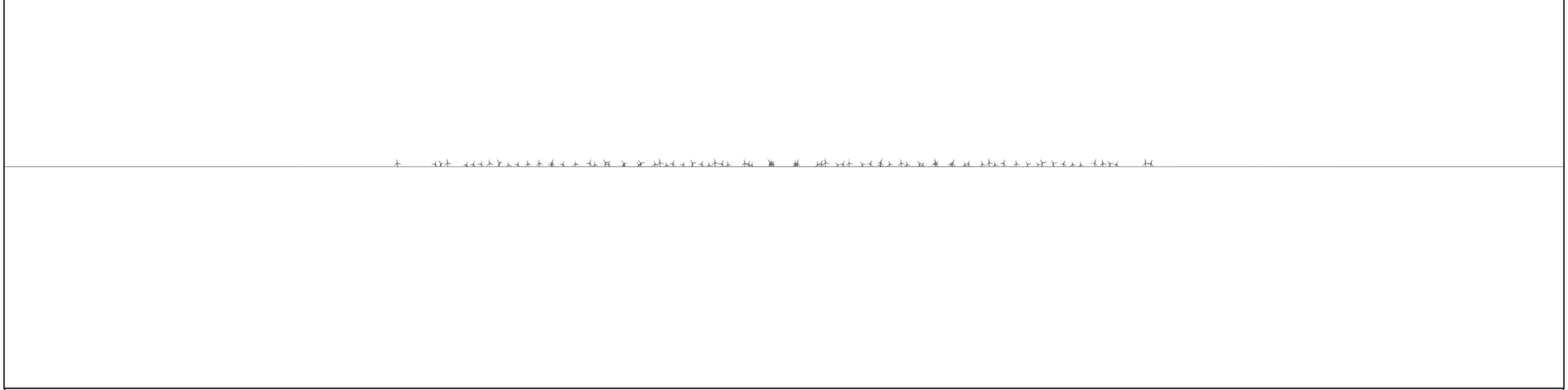
Viewing distance: 30cm for A3 sheet, 43cm for A2, 61cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast**
	Height to hub: 190m & 230m	Version: 1	**20MW turbines at 35km viewed from 6m elevation**
Horizontal angle of view: Cylindrical Projection 75 degrees	Number of turbines: 84	Drawn: TM	**Figure x**
Distance to horizon: 9.4km	Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	



350m high turbines



400m high turbines

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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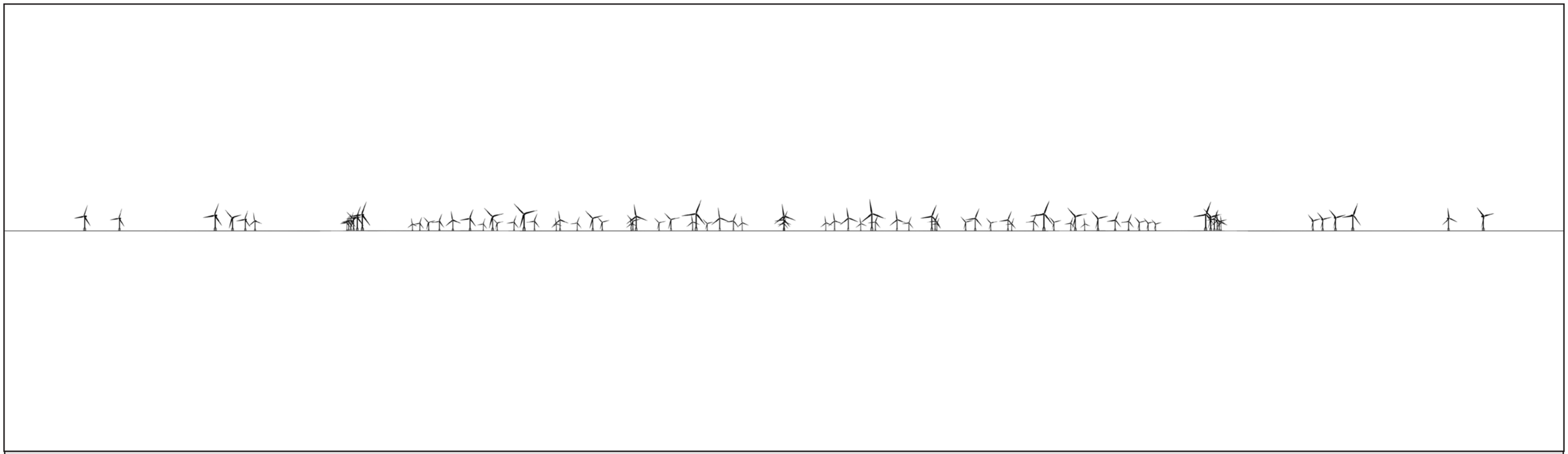
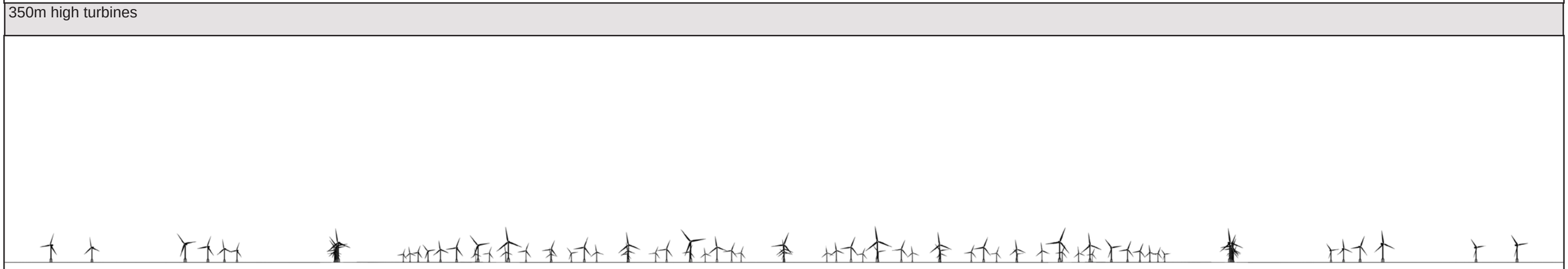
Viewing distance: 30cm for A3 sheet, 43cm for A2, 61cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast**
	Height to hub: 190m & 230m	Version: 1	**20MW turbines at 44km viewed from 6m elevation**
Horizontal angle of view: Cylindrical Projection 75 degrees	Number of turbines: 84	Drawn: TM	**Figure x**
Distance to horizon: 9.4km	Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	

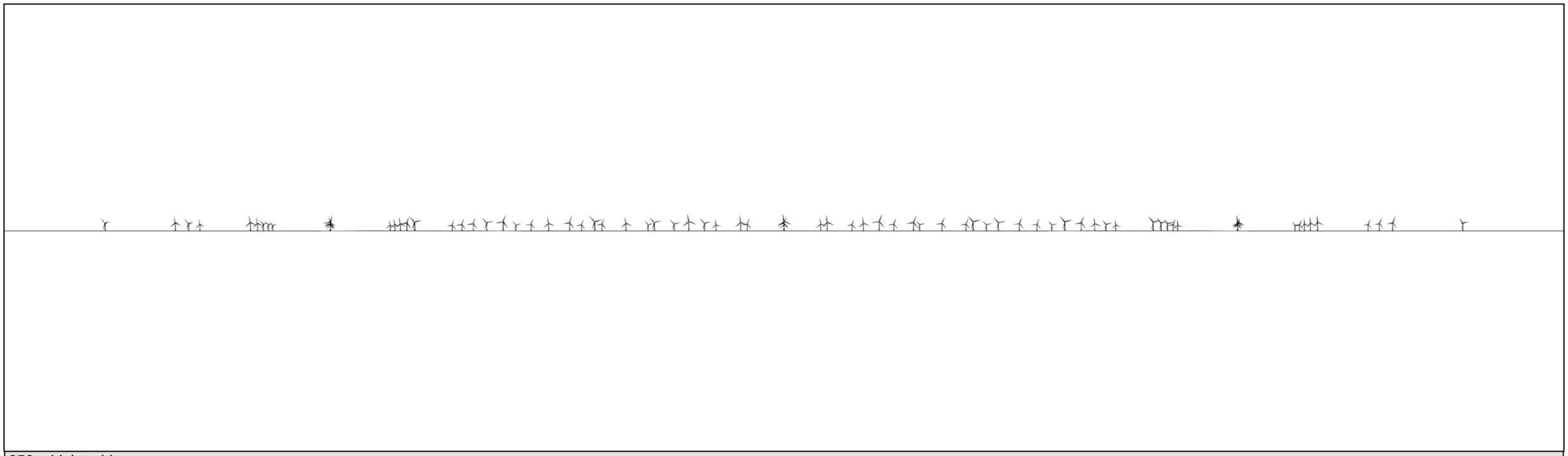


350m high turbines

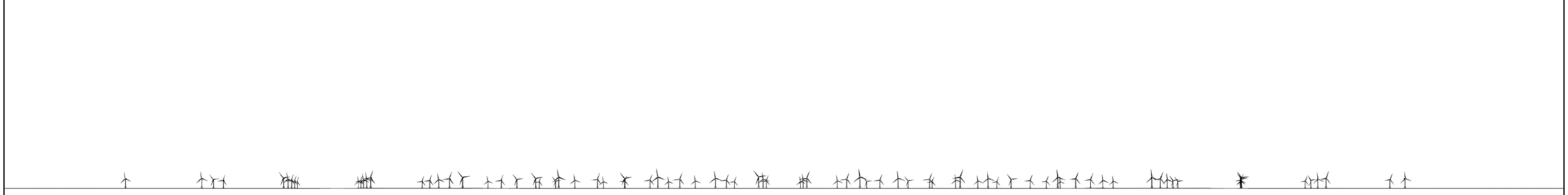


400m high turbines

Notes: An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction www.whiteconsultants.co.uk	Viewing distance: 30cm for A3 sheet, 43cm for A2, 61cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast** **20MW turbines at 13km viewed from 22m elevation** **Figure x**
	Horizontal angle of view: Cylindrical Projection 75 degrees	Height to hub: 190m & 230m	Version: 1	
	Distance to horizon: 18.1km	Number of turbines: 84	Drawn: TM	
		Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	

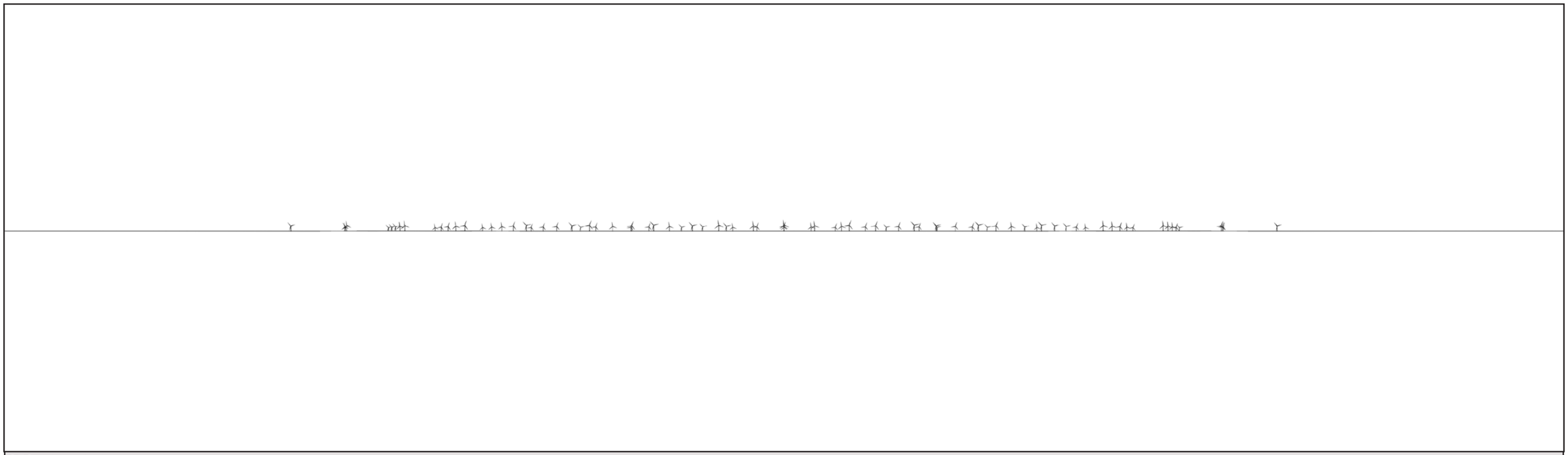


350m high turbines

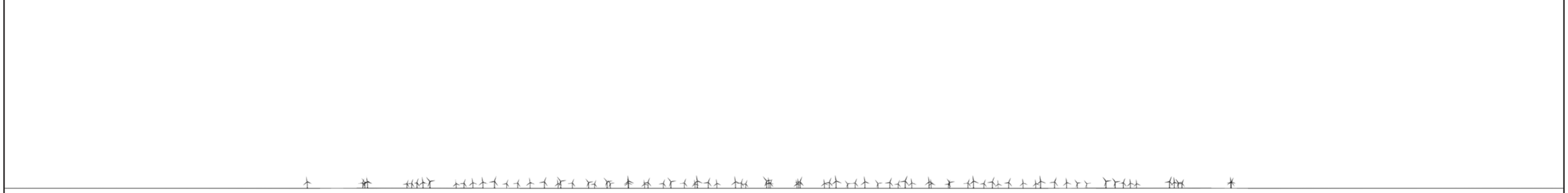


400m high turbines

Notes: An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction	Viewing distance: 30cm for A3 sheet, 43cm for A2, 61cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast**
		Height to hub: 190m & 230m	Version: 1	**20MW turbines at 24km viewed from 22m elevation**
	Horizontal angle of view: Cylindrical Projection 75 degrees	Number of turbines: 84	Drawn: TM	**Figure x**
www.whiteconsultants.co.uk	Distance to horizon: 18.1km	Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	



350m high turbines



400m high turbines

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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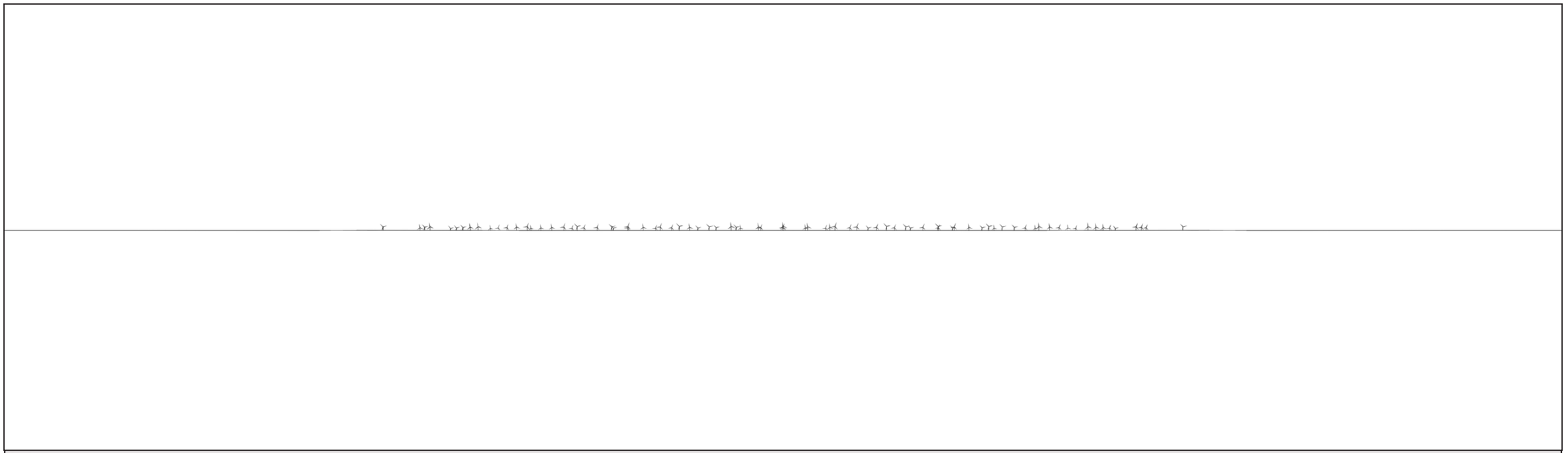
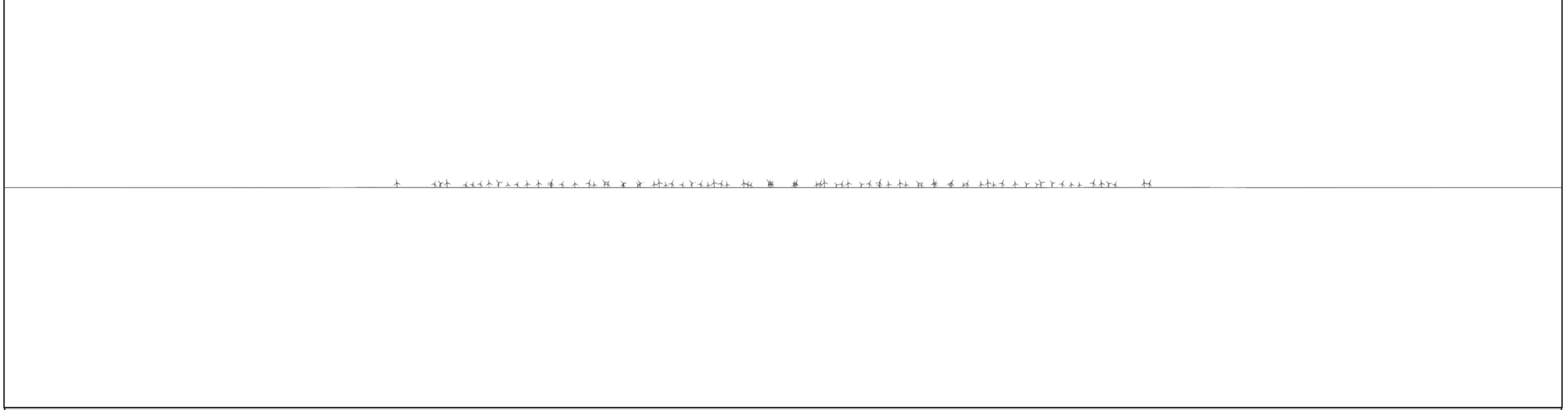
Viewing distance: 30cm for A3 sheet, 43cm for A2, 61cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast**
	Height to hub: 190m & 230m	Version: 1	**20MW turbines at 35km viewed from 22m elevation**
Horizontal angle of view: Cylindrical Projection 75 degrees	Number of turbines: 84	Drawn: TM	**Figure x**
Distance to horizon: 18.1km	Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	



350m high turbines



400m high turbines

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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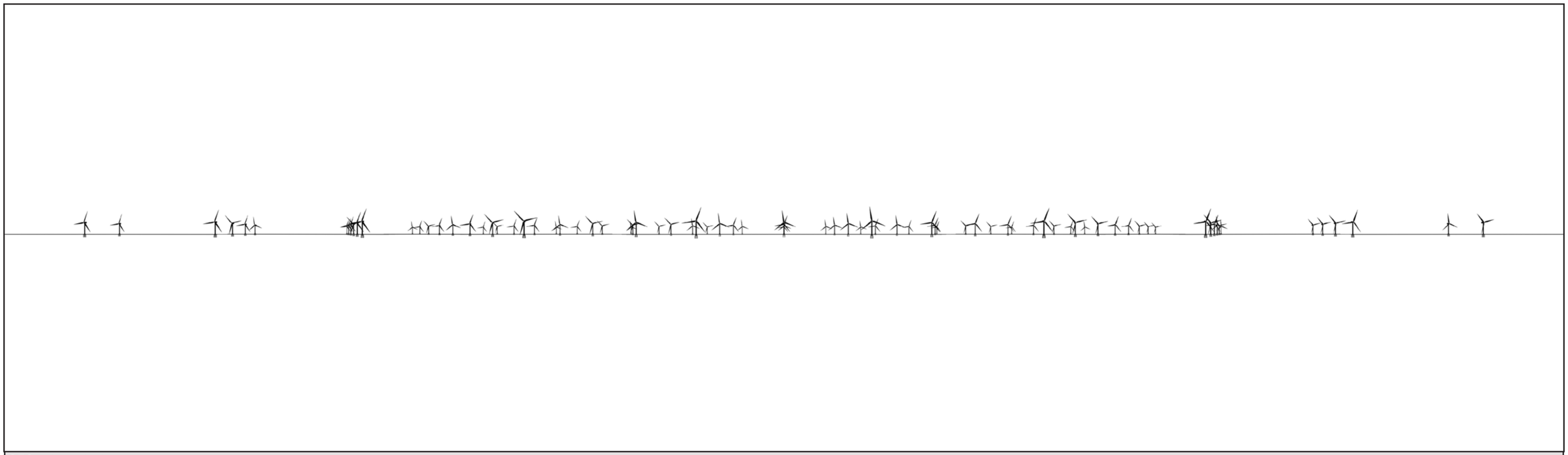
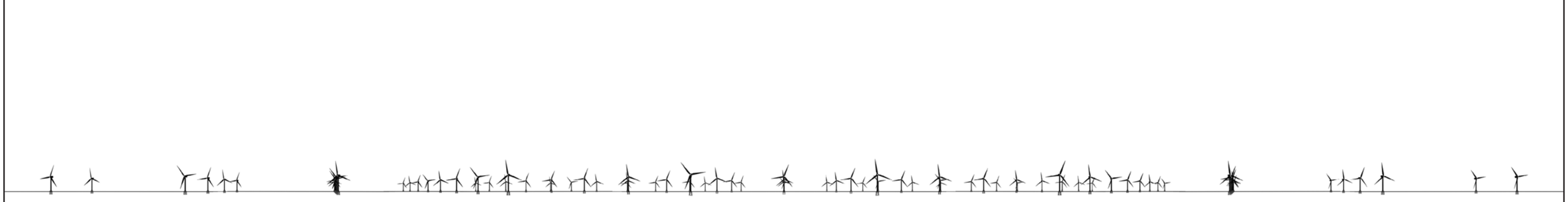
Viewing distance: 30cm for A3 sheet, 43cm for A2, 61cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast**
	Height to hub: 190m & 230m	Version: 1	**20MW turbines at 44km viewed from 22m elevation**
Horizontal angle of view: Cylindrical Projection 75 degrees	Number of turbines: 84	Drawn: TM	**Figure x**
Distance to horizon: 18.1km	Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	



350m high turbines



400m high turbines

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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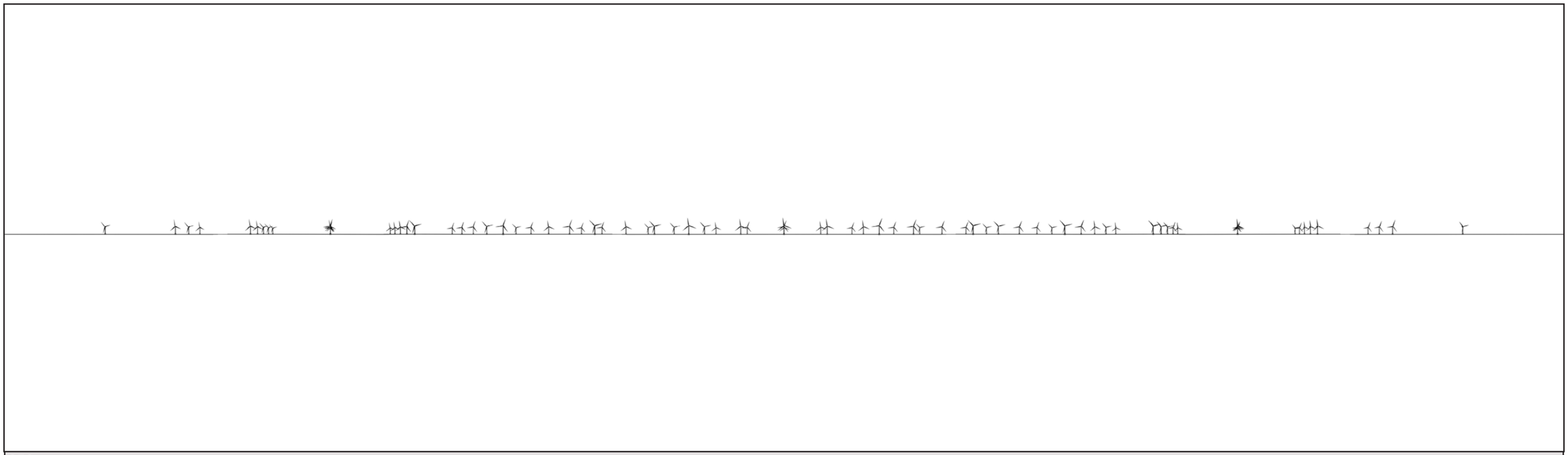
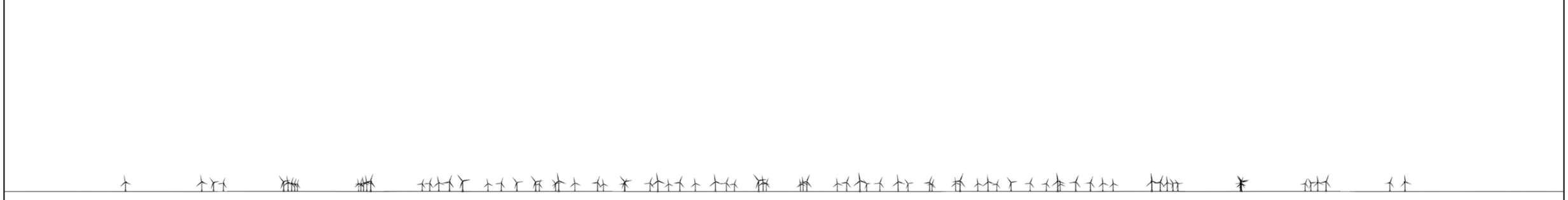
Viewing distance: 30cm for A3 sheet, 43cm for A2, 61cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast**
	Height to hub: 190m & 230m	Version: 1	**20MW turbines at 13km viewed from 100m elevation**
Horizontal angle of view: Cylindrical Projection 75 degrees	Number of turbines: 84	Drawn: TM	**Figure x**
Distance to horizon: 38.6km	Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	

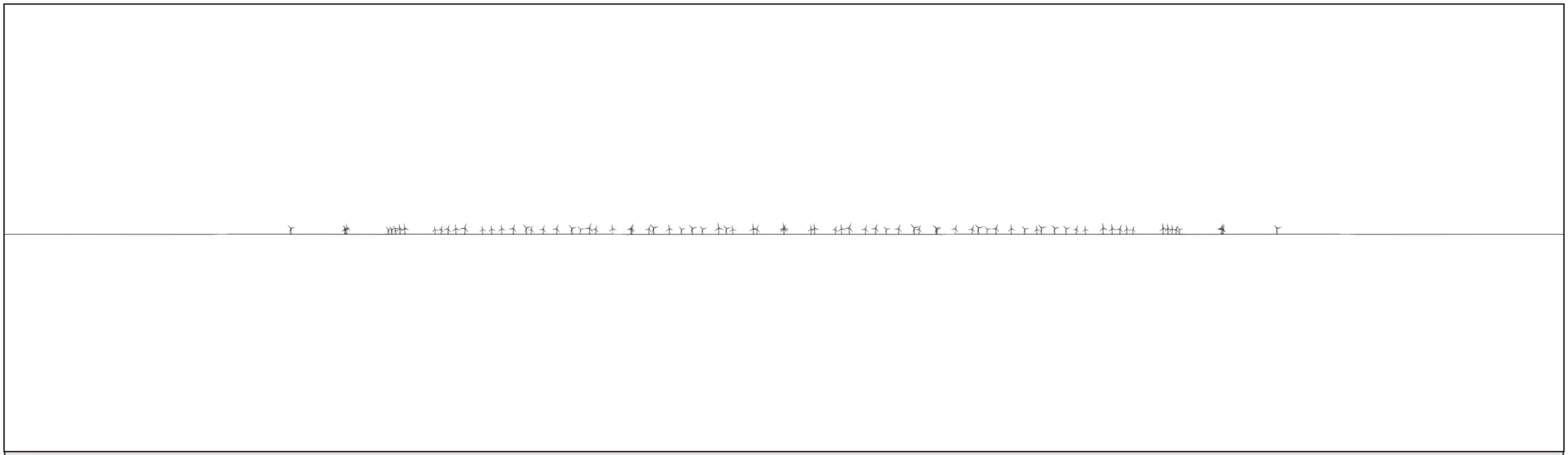


350m high turbines

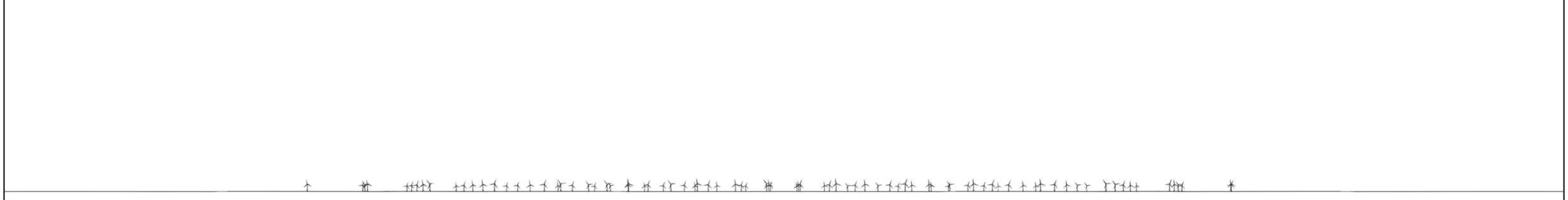


400m high turbines

Notes: An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction www.whiteconsultants.co.uk	Viewing distance: 30cm for A3 sheet, 43cm for A2, 61cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast** **20MW turbines at 24km viewed from 100m elevation** **Figure x**
		Height to hub: 190m & 230m	Version: 1	
	Horizontal angle of view: Cylindrical Projection 75 degrees	Number of turbines: 84	Drawn: TM	
	Distance to horizon: 38.6km	Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	



350m high turbines



400m high turbines

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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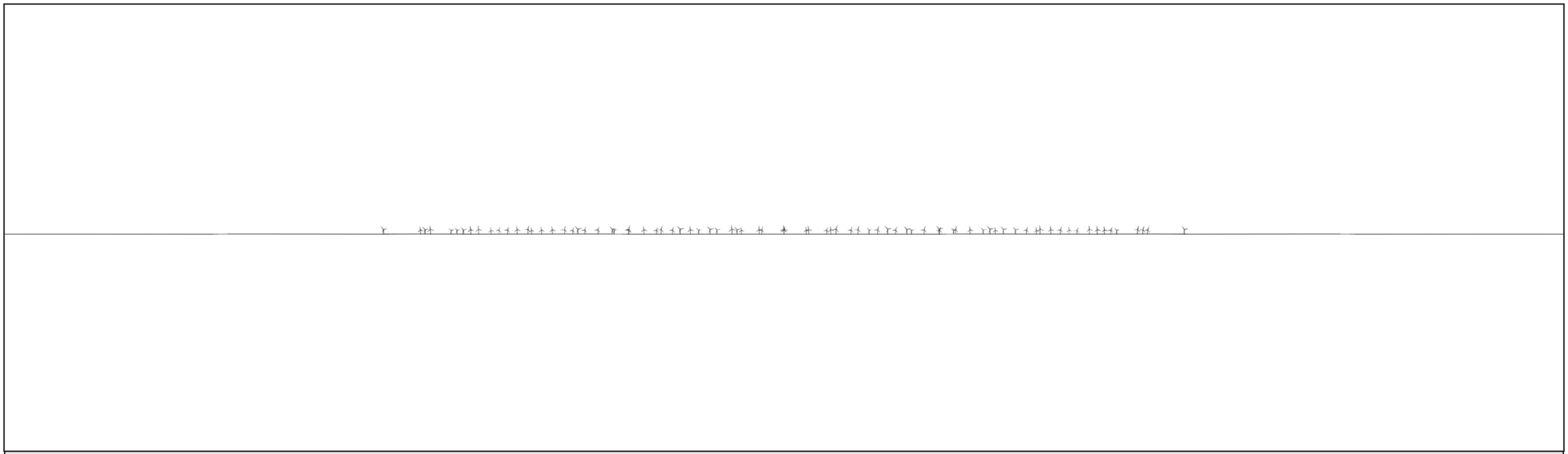
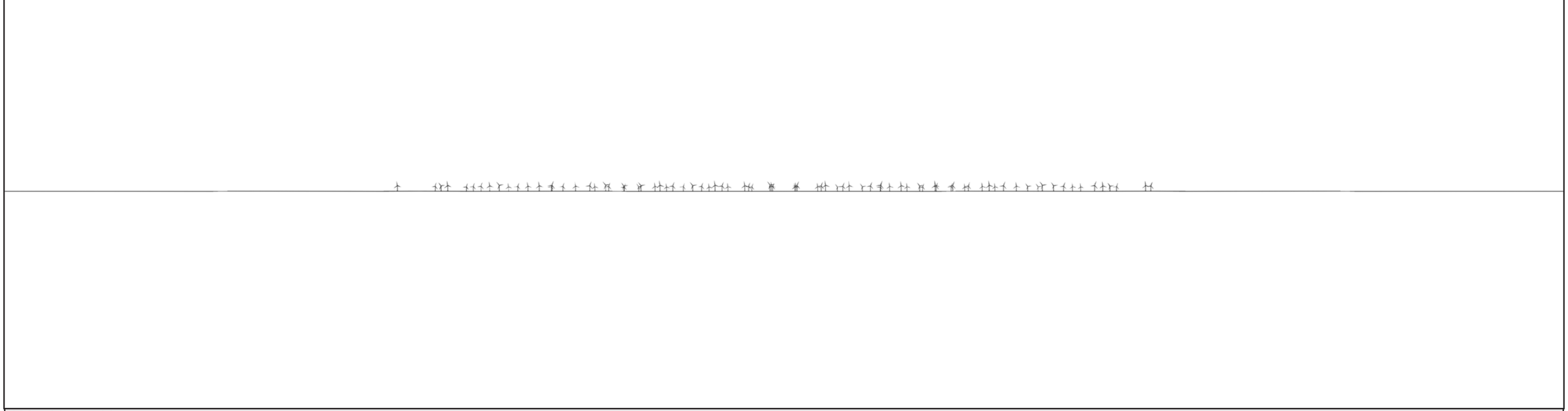
Viewing distance: 30cm for A3 sheet, 43cm for A2, 61cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast**
	Height to hub: 190m & 230m	Version: 1	**20MW turbines at 35km viewed from 100m elevation**
Horizontal angle of view: Cylindrical Projection 75 degrees	Number of turbines: 84	Drawn: TM	**Figure x**
Distance to horizon: 38.6km	Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	



350m high turbines



400m high turbines

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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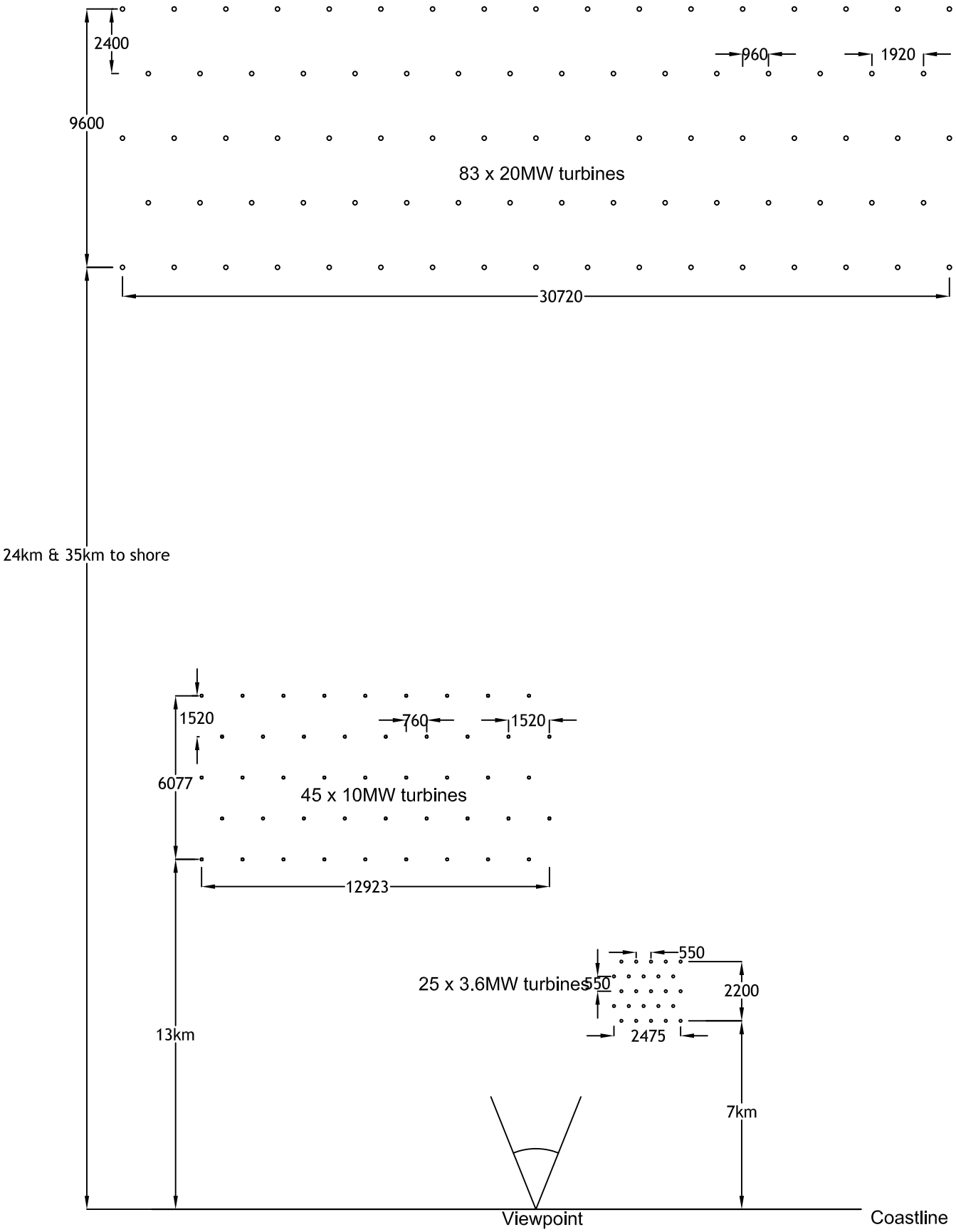
Viewing distance: 30cm for A3 sheet, 43cm for A2, 61cm for A1	Turbine height to blade tip: 350m & 400m	Date: 12/9/19	Title: **View of windfarm from coast**
	Height to hub: 190m & 230m	Version: 1	**20MW turbines at 44km viewed from 100m elevation**
Horizontal angle of view: Cylindrical Projection 75 degrees	Number of turbines: 84	Drawn: TM	**Figure x**
Distance to horizon: 38.6km	Spacing of turbines: 7.5 x 6 rotor diameter	Checked: SW	

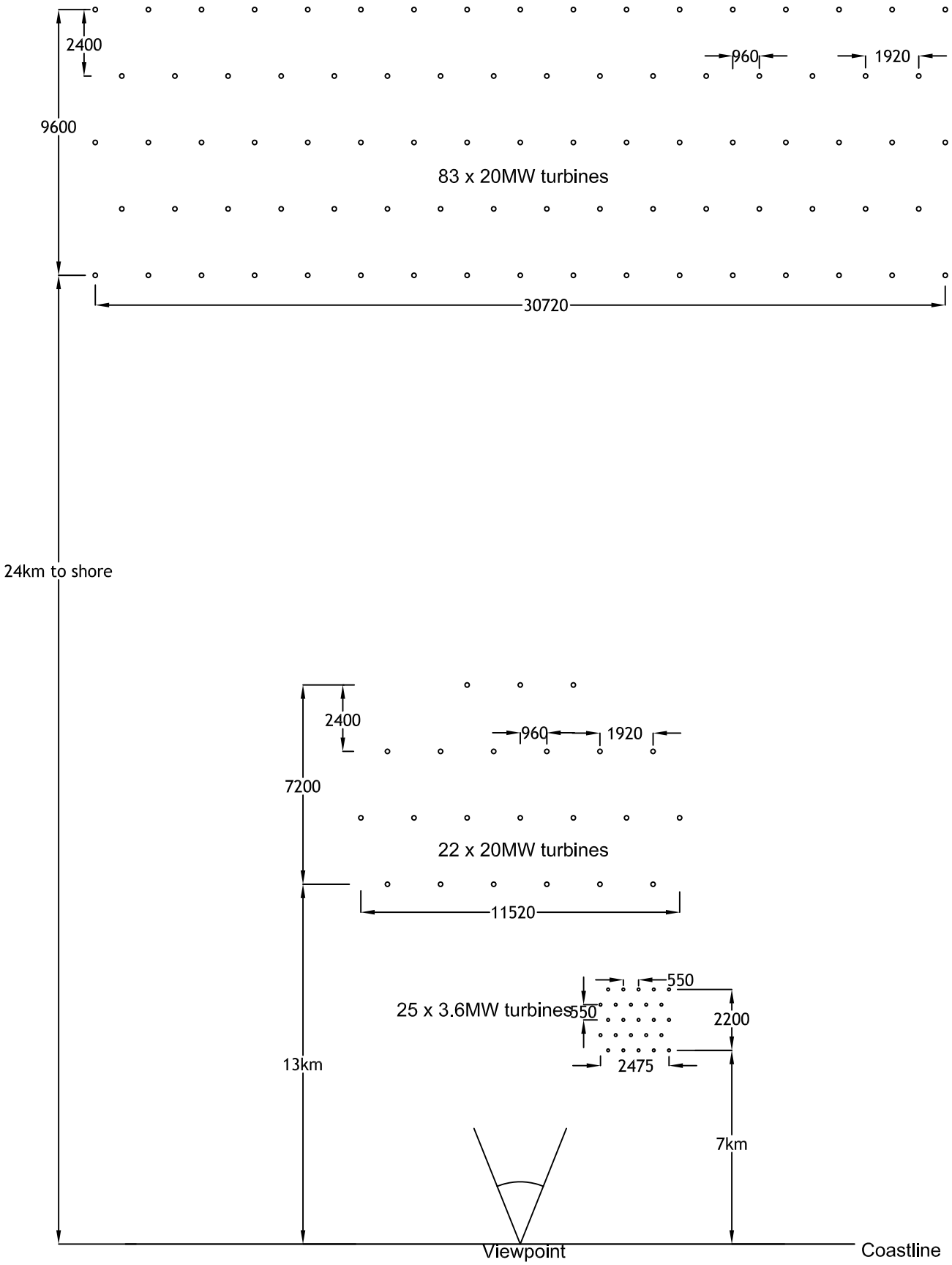
Appendix E5 Cumulative wireline wind farm scenario plans



All Dimensions in metres
unless otherwise stated

Plan View
Scale 1: 200,000

Figure x - Cumulative Windfarm Scenario 20, 10 and 3.6MW Turbines



All Dimensions in metres
unless otherwise stated

Plan View
Scale 1: 200,000

Figure x - Cumulative Windfarm Scenario 20, 20 and 3.6MW Turbines

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Appendix E6 Cumulative wirelines

View of windfarms from coast from 22m elevation

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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Viewing distance: 25.5cm for A3 sheet, 36cm for A2, 51cm for A1	Turbine height to blade tip: 350m @ 24km, 220m @ 13km, 137m @ 7km	Date: 12/9/19	Title: **Cumulative Effects Scenario**
	Height to hub: 190m @ 24km, 125m @ 13km, 83.5m @ 7km	Version: 1	**84 x 20MW turbines at 24 km +**
Horizontal angle of view: Cylindrical Projection 90 degrees	Number of turbines: 84 + 45 + 25	Drawn: TM	**45 x 10MW at 13 km + 25 x 3.6MW at 7 km**
Distance to horizon: 18.1km	Spacing of turbines (m): 1920 x 2400, 1520 x 1520 & 550 x 550	Checked: SW	

View of windfarms from coast from 22m elevation

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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Viewing distance: 25.5cm for A3 sheet, 36cm for A2, 51cm for A1	Turbine height to blade tip: 350m @ 24km, 220m @ 13km, 137m @ 7km	Date: 12/9/19	Title: **Cumulative Effects Scenario**
	Height to hub: 190m @ 24km, 125m @ 13km, 83.5m @ 7km	Version: 1	**84 x 20MW turbines at 35 km +**
Horizontal angle of view: Cylindrical Projection 90 degrees	Number of turbines: 84 + 45 + 25	Drawn: TM	**45 x 10MW 13 km + 25 x 3.6MW at 7 km**
Distance to horizon: 18.1km	Spacing of turbines (m): 1920 x 2400, 1520 x 1520 & 550 x 550	Checked: SW	

View of windfarms from coast from 22m elevation

Notes:

An earth's radius of 7430km has been used to account for the combined effects the earth's curvature and light refraction

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Viewing distance: 25.5cm for A3 sheet, 36cm for A2, 51cm for A1	Turbine height to blade tip: 350m @ 24km, 350m @ 13km, 137m @ 7km	Date: 12/9/19	Title: **Cumulative Effects Scenario**
	Height to hub: 190m @ 24km, 190m @ 13km, 83.5m @ 7km	Version: 1	**84 x 20MW turbines at 24 km +**
Horizontal angle of view: Cylindrical Projection 90 degrees	Number of turbines: 84 + 22 + 25	Drawn: TM	**22 x 20MW at 13 km + 25 x 3.6MW at 7 km**
Distance to horizon: 18.1km	Spacing of turbines (m): 1920 x 2400, 1920 x 2400 & 550 x 550	Checked: SW	

Appendix F SVIA analysis of visual effects related to turbine numbers

Summary analysis of SVIA visual effects of offshore wind farms based on number of turbines in array

Wind farm	Round	Status	Turbine capacity in MW*	Maximum turbine height to blade tip (m)**	Max no. of turbines	Maximum windfarm capacity (MW)**	Nearest coast km	Existing windfarms in baseline?	No. of SVIA viewpoints	Low magnitude of effect***		Medium magnitude of effect	
										Average Distance km	Maximum Distance km	Average Distance km	Maximum Distance km
Hywind	Demo	Implemented	6	178	5	30	23	n	7	25.9	29		
Kincardine	SFD	Construction	7 (8.4)	176	7	50	15	n	23	23.2	36	19.6	35
Gunfleet Sands 2	1	Implemented	3.6	128	22	173	8.5	y	8	12.1	19.6		
North Hoyle	1	Implemented	2	107	30	60	7.5	n	12	18.3	21.8	11.2	13.5
Kentish Flats	1	Implemented	3	140 (115)	30	90	8	n	13	21.1	26.9	11.2	12.1
Thanet Extension		Submitted	08-Dec	250	34	340	8	y	18	26.3	44.1	16.1	19.9
Burbo Bank Extension		Implemented	3.6	223 (187)	36	254	7	y	18	21.7	30.6	15.1	22
East Anglia ONE North	3	Submitted	Dec-19	300	53	800	36	n	17	42.9	48.8		
Inch Cape	Sco 1	Consented	9.5	291	72	1000	15	y	26	42	52.5	29.7	34.8
Moray West	3	Consented	10-Dec	285	85	1116	22	y	25	40.8	53	25.8	28
Sheringham Shoal	2	Implemented	3.6	172 (135)	88	317	17	n	26	23.5	25	19.2	21
Walney 1	2	Implemented	3.6	202 (137)	93	186	15	y	17	23.2	23.4	16.5	18.8
Thanet Sands	2	Implemented	3	150 (115)	100	300	11	n	10	21.8	27.7	17.5	17.5
Westermost Rough A	2	Implemented	6	172 (177)	110	210	8	n	9	18.9	32.6	15.3	17.5
Seagreen	3	Consented	12.5	280	120	1500	27	y	13	35.3	38	32	32
Navitus Bay	3	Refused	8	200	121	970	14	n	12	24.9	28.2	19.5	23.1
Neart na Gaoithe	Sco 1	Consented	08-Oct	197 (208)	128	448	15	y	18	32.9	39	28	28
West of Duddon Sands	2	Implemented	3.6	150	139	389	14	y	17	23.3	26.3	11	14.6
Greater Gabbard	2	Implemented	3.6	170 (131)	141	504	23	n	6				
Beatrice Offshore	Sco 1	Construction	7	198	142	588	22	n	16	29.7	33.1	22.2	25.6
Gwynt y Mor	2	Implemented	3.6	140	160	576	18	y	36	22.3	35.8	14.3	15.3
Rampion	3	Construction	3.6-7 (3.45)	210 (140)	175	400	13	n	29	26.4	29.5	19.9	30
Docking Shoal	2	Withdrawn	03-Jun	145	177	540	14	y	8	22.3	26.3	19.1	19.1
Walney Extension		Implemented	8.25	222	207	659	19	y	17	25.6	32.3		
London Array	2	Implemented	3.6	175 (147)	271	630	21	y	18	21	21		
Atlantic Array	3	Withdrawn	5	180	278	1390	14	n	37	28.4	37.5	20.9	27.5

* Shows as assessed in SVIA (implemented output in brackets) ** in SVIA (implemented height or number in brackets). *** Low magnitude category includes equivalent of low and medium/low

	Table ordered in terms of number of turbines from lowest to highest
	Lowest distance for effect
	Highest distance for effect

Appendix G Seasonal visibility percentage variation at coastal stations

Coastal Surface Stations – Visibility Percentage Ranges

1. St Athan (2998E, 1683N) (49m AMSL)

Across a 10 year spread, 16-20km and 26-30km are the most common visibility ranges recorded at St Athan surface station. Any visual observations beyond 30km are very rare which suggests a distinct visual cut off point. The patterns of seasonal variations on a monthly basis are very clear within the visual ranges. As expected (taking into account meteorological phenomenon), the summer months (June – September) experience a much larger 'maximum percentage' visual range (26 - 30km) in comparison to the winter months (November – February) which experience a much lower variable range (6-20km).

Visibility Range	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All Year
0 to 5	13.3	15.8	19.0	11.9	11.5	6.6	6.7	6.2	8.0	12.7	10.5	17.0	11.6
6 to 10	18.2	21.3	18.4	19.4	17.2	10.4	9.1	9.3	12.0	15.6	14.6	17.4	15.2
11 to 15	21.7	20.8	18.9	19.0	16.8	16.8	13.2	12.3	13.7	15.9	17.3	16.2	16.9
16 to 20	18.5	17.4	16.0	16.5	18.5	19.9	17.9	14.2	14.4	16.3	18.5	17.4	17.1
21 to 25	13.0	11.6	11.3	14.0	15.4	18.0	19.5	17.0	16.0	14.3	15.9	13.7	15.0
26 to 30	11.5	9.5	11.6	14.3	15.7	22.0	25.6	25.6	22.7	17.0	16.5	12.9	17.1
31 to 35	2.5	2.0	2.5	2.8	2.6	3.3	4.7	7.7	6.9	4.4	4.0	3.4	3.9
35+	1.3	1.4	2.3	2.0	2.3	3.0	3.2	7.7	6.3	3.9	2.7	2.0	3.2

2. Rhyl (2994E, 3746N) (77m AMSL)

Across a 10 year spread, 26-30km is the most common visibility range recorded at Rhyl surface station. There are no obvious patterns of seasonal variability within this dataset. In general, visibility appears to remain consistently throughout the 21-30km range. At an average of 10% all year round, observations beyond 30km are more regular, in particular from September – November (14.3 – 14.9%). There does appear to be a significant visual range consistent throughout the year which altogether does not run in parallel to the Taylor (1998) study, which suggested visibility scores fall drastically at around 18km.

Visibility Range	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All Year
0 to 5	7.5	9.1	10.5	9.2	9.3	6.0	5.9	10.0	6.7	9.5	6.3	9.0	8.3
6 to 10	11.1	12.0	14.0	14.9	13.4	11.8	10.9	11.4	13.8	13.6	10.8	19.0	13.1
11 to 15	8.6	9.0	9.2	10.5	10.3	12.9	13.0	10.6	10.5	11.0	7.6	11.0	10.3
16 to 20	11.3	13.5	13.4	12.7	14.1	20.7	21.0	19.4	14.4	13.2	12.7	13.0	14.9
21 to 25	21.3	19.4	17.5	15.1	16.8	20.3	22.6	18.7	15.1	13.9	17.9	18.6	18.1
26 to 30	24.2	21.8	18.8	18.4	20.0	19.2	17.6	17.5	18.3	18.0	23.1	16.3	19.4
31 to 35	6.0	6.0	6.2	6.7	6.5	4.3	4.1	4.9	6.3	7.1	7.3	5.2	5.9
35+	9.9	9.2	10.4	12.7	9.6	4.9	4.8	7.5	14.9	13.6	14.3	7.8	10.0

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3. Leuchars (3468E, 7209N) (10 AMSL)

Across a 10 year spread, visibility beyond 35km is the most common range recorded at Leuchars surface station. In comparison to all of the other observation stations, this figure is extremely high and therefore suggests that there may be some discrepancies in the data. As reported by SNH (2005) based on work by Husar & Husar (1998), the visual range of Scotland is significantly higher than that for England and Wales which may provide some indication of why the visual range is so high. However, this study only looked at the coefficient of air clarity (haze) rather than meteorological conditions. Looking at distances beyond 30km in more detail, the table below indicates that there is a clear pattern occurring every five kilometres in that the frequency of recordings varies between high and low. It is not clear why these fluctuating observations would occur at these distances.

Visibility Range	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All Year
0 to 5	6.8	8.8	12.4	11.7	7.7	6.8	10.0	11.2	8.3	7.7	5.3	8.2	8.7
6 to 10	8.7	8.7	9.2	8.2	8.9	8.7	8.0	7.7	7.3	7.8	8.1	12.0	8.6
11 to 15	10.2	10.4	8.8	9.6	10.4	9.1	8.5	8.1	9.0	10.4	9.7	11.8	9.7
16 to 20	12.8	11.4	10.0	10.6	11.8	10.2	11.1	10.7	11.3	12.5	10.8	10.8	11.2
21 to 25	10.7	8.8	10.0	8.6	9.7	9.6	10.1	8.6	10.7	10.0	9.1	10.1	9.7
26 to 30	12.8	11.4	9.0	12.5	11.8	11.6	11.8	12.1	13.1	12.2	11.3	11.5	11.8
31 to 35	3.6	4.1	5.1	5.2	5.2	5.9	5.7	5.5	5.8	6.2	5.1	3.7	5.1
35+	34.2	36.4	35.6	33.6	34.4	38.2	34.7	36.2	34.4	33.4	40.7	31.9	35.3

4. Weybourne (6069E, 3436N) (21m AMSL)

Across a 10 year spread, 26-30km is the most common visibility range recorded at Weybourne surface station. Any visual observations beyond 30km are very rare which suggests a distinct visual cut off point. The patterns of seasonal variations on a monthly basis are very clear within the visual ranges. As expected (taking into account meteorological phenomenon), the summer months (June – September) experience a much larger 'maximum percentage' visual range (26 - 30km) in comparison to the winter months (November – February) which experience a much lower variable range (6-15km).

Visibility Range	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All Year
0 to 5	9.8	14.7	16.7	12.4	7.8	6.8	8.0	8.7	8.9	9.2	9.4	12.6	10.4
6 to 10	19.4	20.9	18.6	19.5	14.2	10.6	13.3	12.9	13.1	13.3	15.3	19.4	15.9
11 to 15	17.0	20.2	19.5	18.0	16.4	12.8	15.2	13.9	14.6	14.4	22.5	18.9	16.9
16 to 20	17.7	15.7	17.0	16.5	15.0	15.6	15.6	15.8	16.8	17.2	19.3	17.9	16.7
21 to 25	17.8	13.6	13.9	16.3	16.3	20.7	18.3	19.8	18.3	18.4	15.4	14.2	16.9
26 to 30	16.2	12.7	11.6	14.4	23.2	26.8	24.2	25.1	25.2	22.7	15.2	14.1	19.3
31 to 35	1.5	1.8	1.6	1.9	3.8	4.0	2.9	3.2	2.6	3.6	2.1	2.2	2.6
35+	0.6	0.4	1.1	0.9	3.3	2.6	2.5	0.7	0.4	1.1	0.9	0.7	1.2

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5. Hurn (4117E, 0978N) (10m AMSL)

Across a 10 year spread, 26-30km is the most common visibility range recorded at Hurn surface station. However, upon reflection, the months June-November have recorded 21-25km as the most frequent observation. There are no clear seasonal patterns within this dataset; however a higher visual range is present during the summer months as would be expected with increased levels of sunlight.

Visibility Range	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All Year
0 to 5	14.0	14.1	16.8	11.5	9.8	4.9	5.1	7.4	10.3	13.0	12.6	19.6	11.6
6 to 10	15.5	20.8	18.6	16.9	14.0	10.6	9.8	10.3	12.9	15.7	15.9	18.8	15.0
11 to 15	15.5	13.9	13.2	13.8	14.0	13.3	14.1	11.4	13.7	13.7	12.1	12.4	13.4
16 to 20	14.0	11.7	11.4	13.8	14.4	16.7	18.0	15.6	16.1	15.2	15.1	11.5	14.5
21 to 25	16.2	12.4	15.5	16.1	18.3	21.6	20.2	22.9	19.7	18.1	19.1	14.6	17.9
26 to 30	19.1	17.6	17.8	17.8	18.4	21.1	20.0	21.1	17.8	16.3	18.1	15.6	18.4
31 to 35	3.4	4.8	3.3	5.2	5.7	5.4	5.3	4.8	4.4	4.1	4.0	3.7	4.5
35+	2.3	4.7	3.3	4.7	5.4	6.4	7.4	6.6	5.1	3.9	3.0	3.7	4.8

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Appendix H North Wales site visit 2016

Offshore Energy Strategic Environmental Assessment

Review and update of Seascape and Visual Buffer study for Offshore Wind farms

ADDENDUM: NORTH WALES COAST SITE VISITS

for

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April 2016

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with

Northumbria University

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1. Introduction

1.1. The North Wales coast was visited in the 2008 Round 3 Seascape Study to explore a range of issues in terms of the visibility and visual intrusion of existing and proposed offshore windfarms. At the time there were two Round 1 windfarms constructed at North Hoyle and Burbo Banks and a third was part way through construction with bases in place at Rhyl Flats. These were around 7-8 km offshore. In addition, the Gwynt y Mor Round 2 windfarm, around 13-16km offshore, had recently been given approval. This has now been constructed and can be viewed along with the other constructed developments. It is therefore pertinent to revisit the area to assess the individual and cumulative effects of these windfarms and comment on the Gwynt y Mor seascape and visual impact assessment (SLVIA) photomontages. The previous report commented on the North Hoyle assessment and wireframes which are not considered to require review or commenting upon further. The Burbo Bank extension wind farm is consented but not yet under construction.

2. Method

2.1. The area was visited on two days- 17th and 30th March 2016 and one viewpoint, at Llandudno promenade, was visited at night on 16 March. The visibility was only poor to good with haze on 17th March which necessitated a second visit on 30ty March which benefited from good to very good visibility. However, the weather on the 2nd visit included sunny spells, high cloud and some haze and as such did not represent a worst case visibility scenario such as very good/excellent (see Appendix B). The photos taken on 17th March were not of sufficient quality/resolution to put in the report. Sample photos to illustrate this report have been used from the 30th March visit only. Six viewpoints were visited to allow comparison with the Gwynt y Mor Study. From these, four have been assessed to give a representative range of viewpoints from different elevations, angles and distances:

- Great Orme car park
- Llandudno promenade, War Memorial
- Rhos on Sea seafront
- Prestatyn, East of Nova Centre

2.2. One viewpoint was visited at night to establish the effect of lighting:

- Llandudno promenade, War Memorial

2.3. The other two viewpoints visited were:

- Abergele seafront
- Bryn Llwyn viewpoint, near Gwaenysgor

2.4. Photographs were taken at each viewpoint using a Canon EOS 600D 18MP digital SLR with a Canon lens at 35mm [equivalent to around 50mm for SLR camera] on a tripod. It should be noted that this lens setting may have been subject to slight variation as it was not taken using a fixed lens and this has been taken into account in the reporting. At each viewpoint photographs were taken over a period of around 15 minutes to optimise the potential visibility. Observations of visibility of wind farms were made and conclusions on visual impact drawn. At some viewpoints comparisons were drawn between SVIA photomontages and the

completed windfarms and photos prepared for this report. The observations were made by a team of two chartered landscape architects. The record of each assessed viewpoint is set out in **Appendix A.** Visibility definitions are set out in **Appendix B.** The definitions for scale of effect are as set out for magnitude of change in DTI (2005) in **Appendix C**. This is consistent with the approach taken for assessing the wireframes.

3. Observations and Conclusions

3.1. The following observations were made:

- As the study period has been in the winter months starting in January 2016 it has been difficult to find days when the visibility is sufficient to assess the effects of Gwynt y Mor and the other windfarms. This reinforces the statistics of the relatively limited number of days that windfarms further offshore are easily visible and/or may have a significant visual impact. This is expanded upon in Appendix C of the main report.
- Different weather conditions had significant effects on the visibility of turbines on the site visits. When sunlight was on turbines, especially when behind the viewer, they were highly visible from long distances eg Gwynt y Mor from 16-28km. Conversely, in overcast and hazy conditions turbines at 8km were difficult to see and could be barely perceptible at around 14km. It was observed that there were variations across the windfarms in variable conditions with some turbines in shade beneath cloud, while others were in sun. Therefore, the windfarm turbines did not appear to be as a strong coherent group in these variable conditions. The closer the windfarm, the less this effect changed the perception of the windfarm eg 8-10km compared to 13-20km.
- The sea state at the time of the second, 30th March 2016, inspection was slight and the horizon line very evident and clear by comparison to windier/rougher sea conditions. This contributed to the increased visibility and clarity of the turbines.
- From the higher viewpoints, the windfarms looked more coherent as the whole of the wind farm and their layout could be seen clearly against the darker sea area. The difference in scale and detail between different windfarms could also be compared eg Gwynt y Mor and Rhyl Flats windfarms from Great Orme.
- From the lower viewpoints, the windfarms looked further away on the horizon, although the turbines were still prominent when sunlit but were often seen against a lighter sky which reduced their effect. The layout of the windfarm was less easy to comprehend than when viewed from higher viewpoints.
- The 35mm digital SLR lens (equivalent to the 50 mm SLR lens) photographs made the windfarm look smaller than when viewed in real life.
- The Gwynt y Mor photomontages showed a different layout to that that was implemented. They also appeared to make turbines smaller than they appeared in real life even though they were for 5MW turbines and those implemented were 3.6MW turbines. Where tested, the photomontage designed to illustrate a view from a viewing distance of around 400mm

had to be held at about 200mm to achieve a similar effect to that seen on site.

- The three Round 1 windfarms are spaced such that they are well separated and sit within an overall seascape as prominent elements but without dominating it apart from adjacent short stretches of coast. While the North Hoyle layout is organised and coherent allowing views to the horizon, there is blade overlapping. It is very clear that the grid is rectilinear and at right angles to the coast. This gives it a semi-industrial appearance. The Burbo Bank layout appears as a well separated 'drift' of turbines when viewed from along the coast in Wales. The Rhyl Flats windfarm is the least successful with rows parallel, and centrally placed, to the concave part of the coast. This makes the layout appear over-regimented and forming the focus of many views. The juxtaposition of the three different layouts is disruptive to the composition of the seascape.
- The Round 2 Gwynt y Mor windfarm is larger, extending further along the coast and is further out to sea than the Round 1 windfarms. It is therefore visible in good visibility at all the viewpoints. The distance of the windfarm away from the coast and its spread means that much of the array did not appear to be in regimented rows for the most part, although this was apparent in places. In many cases, though, there was overlapping between the turbines of the various windfarms which led to a confused image in clear conditions.
- At night, navigational lighting on each turbine was highly apparent at at least a distance of 16km in the case of Gwynt y Mor. Rhyl Flats was more apparent at 11km. The red aviation lighting was brighter but less numerous as it lies on the edges of arrays and could be seen for long distances in good visibility conditions eg Gwynt y Mor from 16-23km. the actual turbines structures themselves could not be seen. Therefore, at night, Gwynt y Mor and Rhyl Flats look like another coastline with a large industrial installation with tall structures. This effect was significantly adverse at a distance of 16km.

3.2. The four existing windfarms off the Welsh Coast combined with the Burbo Banks windfarm to the east create a windfarm seascape with wind turbines as the dominant element in views out to sea along the coast in many places between the Great Orme and the Point of Ayr. This does not mean that offshore wind farm development is inappropriate for the majority of this stretch of coastline due to its particular characteristics. However, it raises the issue of the suitability of this approach in other seascapes and the capacity of this seascape to absorb more or larger development. The spread of Gwynt y Mor and Rhyl Flats combined taking the majority of the horizon in the framed view from Llandudno promenade is not a desirable precedent. Burbo Banks extension with significantly larger turbines relatively close inshore is likely to exacerbate the effect on the eastern stretch of the coast.

APPENDIX A: OESEA 3 Seascape Site Visit Records

SITE VISIT: 17 March 2016

Date:	17/03/16		Time [24h]:	10.00
Location:	Great Orme		Height m AOD	201m
Eastings	Approx. 276660		Northings:	Approx. 383405
Distances [nearest] from windfarms	Gwynt y Mor: 16.2 km	North Hoyle: 26.9 km	Rhyl Flats: Around 12km	Burbo Bank: -
Weather Conditions	Cloudy with sea mist			
Perceived Visibility	Poor			
Light conditions	Overcast			
Commentary	**General:** Relatively poor weather conditions mean that no windfarm can be seen. **Gwynt y Mor:** Description of effect: not visible **North Hoyle:** Description of effect: not visible **Rhyl Flats:** Description of effect: not visible **Burbo Bank:** Description of effect: not visible **Cumulative**: Description of effect: none visible			
Photomontage comments/comparisons with site view and photos	Not able to judge in visibility conditions.			

Date:	17/03/16		Time [24h]:	10.30
Location:	Llandudno promenade by War Memorial		Height m AOD	6m
Eastings	Approx. 278200		Northings:	Approx. 382600
Distances [nearest] from windfarms	Gwynt y Mor: 16 km	North Hoyle: 25.7 km	Rhyl Flats: Around 11km	Burbo Bank: -
Weather Conditions	Cloudy and hazy with some sun			
Perceived Visibility	Moderate/poor			
Light conditions	Slightly overcast			
Commentary	**General:** Relatively poor weather conditions mean that only part of the Gwynt y Mor windfarm can be seen and the turbines are indistinct. North Hoyle and Burbo Bank turbines are not visible. **Gwynt y Mor:** Description of effect: barely perceptible Scale of effect : very small **North Hoyle:** Description of effect: not visible **Rhyl Flats:** Description of effect: perceptible but hazy Scale of effect : small **Burbo Bank:** Description of effect: not visible **Cumulative**: Description of effect: variable visibility means the full extent of windfarms are not visible but appear to fill the majority width of view framed between Great Orme and Little Orme Scale of effect: small/ medium			
Photomontage comments/comparisons with site view and photos	Difficult to judge in visibility conditions.			

Date:	17/03/16		Time [24h]:	11.52
Location:	Rhos on Sea		Height m AOD	6m
Eastings	Approx. 284310		Northings:	Approx. 380810
Distances [nearest] from windfarms	Gwynt y Mor: 14.3 km	North Hoyle: 20.8 km	Rhyl Flats: Around 8km	Burbo Bank: -
Weather Conditions	Cloudy and hazy with some sun			
Perceived Visibility	Good with haze			
Light conditions	Combination of sun and shade from cloud cover			
Commentary	**General:** Moderate weather conditions mean that some of the Gwynt y Mor windfarm can be seen with the turbines picked out by sun visible. Rhyl Flats turbines are all visible. Burbo Bank turbines are not visible. **Gwynt y Mor:** Description of effect: noticeable with turbines clearly stacking in parts Scale of effect : moderate **North Hoyle:** Description of effect: Just apparent Scale of effect : very small **Rhyl Flats:** Description of effect: prominent- very clear Scale of effect : large **Burbo Bank:** Description of effect: not visible **Cumulative**: Description of effect: the two windfarms overlap each other and therefore the turbines in different patterns and at different distances interfere with each other visually. Scale of effect: large			
Photomontage comments/comparisons with site view and photos	No comparison made.			

Date:	17/03/16		Time [24h]:	13.17
Location:	Nova Centre, Prestatyn		Height m AOD	8m
Eastings	Approx. 306235		Northings:	Approx. 383835
Distances [nearest] from windfarms	Gwynt y Mor: 12.6 km	North Hoyle: 7.8 km	Rhyl Flats: approx 14 km	Burbo Bank: -
Weather Conditions	Hazy with sun			
Perceived Visibility	Moderate			
Light conditions	Sunny			
Commentary	**General:** The haze means that Gwynt y Mor windfarm is indistinct and hardly visible. North Hoyle turbines are visible and appear close but the haze makes their outlines less distinct. Rhyl Flats and Burbo Bank turbines are not visible. **Gwynt y Mor:** Description of effect: barely perceptible – only some turbines visible Scale of effect : small **North Hoyle:** Description of effect: the turbines are prominent and stand out. The stacking of the turbines in a linear grid is highly apparent. Scale of effect : large **Rhyl Flats:** Description of effect: none Scale of effect : **Burbo Bank:** Description of effect: none **Cumulative**: Description of effect: north Hoyle contributes the majority of effect although turbines are apparent further to the west. Scale of effect: large			
Photomontage comments/comparisons with site view and photos	The Gwynt y Mor photomontage needed to be held at a viewing distance of 200mm to replicate the apparent size of the implemented turbines. This contrasts with the stated viewing distance of around 400 mm. It should also be noted that the Gwynt y Mor turbines illustrated in the photomontage are stated as 5 MW compared to the 3.6 MW implemented. Therefore it is clear that the turbines in reality are larger than those illustrated in the photomontage and are closer to the 260mm depth photograph.			

SITE VISIT: 30 March 2016

Date:	30/03/16		Time [24h]:	12.50
Location:	Great Orme		Height m AOD	201m
Eastings	Approx. 276660		Northings:	Approx. 383405
Distances [nearest] from windfarms	Gwynt y Mor: 16.2 km	North Hoyle: 26.9 km	Rhyl Flats: Around 12km	Burbo Bank: -
Weather Conditions	Sunny with generally clear skies but some cloud			
Perceived Visibility	Very good			
Light conditions	Overcast on Great Orme but sunny out to sea			
Commentary	**General:** Fairly clear visibility but some atmospheric interference. Both Gwynt y Mor and Rhyl Flats windfarms can be seen clearly with North Hoyle apparent beyond the latter. The yellow bases are apparent in the closer two windfarms, being more vivid in the closer turbines. **Gwynt y Mor:** Description of effect: very noticeable to prominent, medium proportion of horizon, seen in the context of the sea surface with it as the primary backcloth rather than the sky but some turbines breach the horizon. It forms a distinct large cluster of many turbines relatively close together, occasionally stacking. Scale of effect : large **North Hoyle:** Description of effect: visible behind Rhyl Flats creating some minor visual interference . Scale of effect : minor **Rhyl Flats:** Description of effect: prominent, covering a small/medium proportion of horizon forming a distinct cluster or apparently wider spaced turbines. Scale of effect : large **Burbo Bank:** Description of effect: not visible **Cumulative**: Description of effect: combined windfarms cover a large proportion of the horizon. They appear as distinct clusters although they overlap slightly. They form the focus of the view. Scale of effect: large			
Photomontage comments/ comparisons with site view and photos	The Gwynt y Mor photomontage, though relatively accurate proportionally, understates the perceived size of the development when assessed on site and in comparison with a 260mm depth photograph. The size of turbine and layout of windfarm actually implemented is different from the photomontage. The photomontage illustrates 5MW turbines at relatively wide spacings whereas the implemented windfarm uses 3.6MW turbines at closer spacings. The turbines within the North Hoyle windfarm are less visible in the weather conditions prevailing at the time of the visit than shown in the photomontage.			

Date:	30/03/16		Time [24h]:	12.15
Location:	Llandudno promenade by War Memorial		Height m AOD	6m
Eastings	Approx. 278200		Northings:	Approx. 382600
Distances [nearest] from windfarms	Gwynt y Mor: 16 km	North Hoyle: 25.7 km	Rhyl Flats: Around 11km	Burbo Bank: -
Weather Conditions	Sunny with some cloud			
Perceived Visibility	Very good			
Light conditions	Sunny over parts of the view and cloudy in other places			
Commentary	**General:** Both Gwynt y Mor and Rhyl Flats windfarms can be seen and together covered around 70% of the visible horizon between the pier and Little Orme headland. North Hoyle is apparent beyond the Rhyl Flats. The yellow bases are apparent in both windfarms, being more vivid in the Rhyl Flats turbines. The modern turbines contrast with the Victorian architectural style of the promenade, pier and associated buildings. The evident movement at this distance attracts attention in an otherwise static sea view. **Gwynt y Mor:** Description of effect: very noticeable, covering a large proportion of the horizon. It forms a large cluster of many turbines relatively close together, occasionally stacking. Scale of effect : large **North Hoyle:** Description of effect: visible behind Rhyl Flats creating some minor visual interference Scale of effect : minor **Rhyl Flats:** Description of effect: noticeable/prominent turbines close to, covering a small/medium proportion of horizon Scale of effect : moderate/large **Burbo Bank:** Description of effect: not visible **Cumulative**: Description of effect: combined windfarms cover a large proportion of the horizon in the framed view between Great Orme and Little Orme. Scale of effect: large			
Photomontage comments/comparisons with site view and photos	The Gwynt y Mor photomontage, though relatively accurate proportionally, understates the perceived size of the development when assessed on site and in comparison with a 260mm depth photograph. The size of turbine and layout of windfarm actually implemented is different from the photomontage. The photomontage illustrates 5 MW turbines at relatively wide spacings whereas the implemented windfarm uses 3.6 MW turbines at closer spacings. The turbines within the array which are further away are less visible in the weather conditions prevailing at the time of the visit than shown in the photomontage.			

Date:	30/03/16		Time [24h]:	11.53
Location:	Rhos on Sea		Height m AOD	6m
Eastings	Approx. 284310		Northings:	Approx. 380810
Distances [nearest] from windfarms	Gwynt y Mor: 14.3 km	North Hoyle: 20.8 km	Rhyl Flats: Around 8km	Burbo Bank: -
Weather Conditions	Sun and cloudy with slight haze			
Perceived Visibility	Good			
Light conditions	Combination of sun and shade from cloud cover			
Commentary	**General:** Good weather conditions mean that most of the Gwynt y Mor windfarm can be seen with the turbines picked out by the sun. Rhyl Flats turbines are all visible, although some are in shade. North Hoyle turbines do not appear to be visible and Burbo Bank turbines are not visible. The yellow bases are apparent in all windfarms, being more vivid (and detailed) in the closer turbines. **Gwynt y Mor:** Description of effect: noticeable with turbines in sun clearly stacking in parts but partly behind Rhyl Flats. Scale of effect : large **North Hoyle:** Description of effect: not apparent **Rhyl Flats:** Description of effect: prominent- clear, although nearest turbines are in the shade which slightly reduces the impact. Scale of effect : large **Burbo Bank:** Description of effect: not visible **Cumulative**: Description of effect: the two windfarms overlap each other and therefore the turbines in different patterns and at different distances interfere with each other visually. Scale of effect: large			
Photomontage comments/comparisons with site view and photos	No comparison made.			

Date:	30/03/16		Time [24h]:	10.54
Location:	Nova Centre, Prestatyn		Height m AOD	8m
Eastings	Approx. 306235		Northings:	Approx. 383835
Distances [nearest] from windfarms	Gwynt y Mor: 12.6 km	North Hoyle: 7.8 km	Rhyl Flats: approx 14 km	Burbo Bank: Approx 21km
Weather Conditions	Sun and cloudy with slight haze			
Perceived Visibility	Very good			
Light conditions	Combination of sun and shade from cloud cover			
Commentary	**General:** The variable cloud cover means that three of the four visible windfarms have some turbines in sun and some in shade. North Hoyle turbines are visible and appear close. Gwynt y Mor lies beyond this and spreads further west. Rhyl Flats and Burbo Bank turbines are both visible as separate clusters. The Douglas oil and gas platform at 24km is just visible beyond the windfarms. The yellow bases are apparent in all windfarms except Burbo Bank, being more vivid and detailed in the closer turbines. **Gwynt y Mor:** Description of effect: Most turbines visible- most in shade and some in sun. The array covers a moderate/large part of the horizon with a mix of well spaced and stacked turbines depending on the relative angle of view. The closest turbines lie behind North Hoyle which is more prominent as it is closer still. Scale of effect : large **North Hoyle:** Description of effect: all the turbines are visible and most are in the sun. The turbines are prominent and stand out. The stacking of the turbines in a linear grid is highly apparent. Scale of effect : large **Rhyl Flats:** Description of effect: all the turbines are visible as a separate cluster from the other windfarms, some being in shade and some being in sun. The turbines are noticeable and cover a small/medium extent on the horizon. Scale of effect: moderate **Burbo Bank:** Description of effect: the windfarm is apparent and visible with the sun on it. The layout of the turbines appears as a well spaced random drift with little overlapping of blades. The array covers a moderate spread of the horizon. Scale of effect: moderate/small. **Cumulative**: Description of effect: All four windfarms contribute to the effect covering a large part of the horizon and there is overlapping between North Hoyle and Gwynt y Mor. The combined effect is a seascape dominated by windfarm ie a windfarm seascape. Scale of effect: large/very large			
Photomontage	The Gwynt y Mor photomontage needed to be held at a viewing distance			

comments/comparisons with site view and photos	of 200mm to replicate the apparent size of the implemented turbines. This contrasts with the stated viewing distance of around 400 mm. It should also be noted that the Gwynt y Mor turbines illustrated in the photomontage are stated as 5MW compared to the 3.6MW implemented. Therefore it is clear that the turbines in reality are larger than those illustrated in the photomontage and are closer to the 260mm depth photograph. The turbines in the photograph are slightly more recessive than the photomontage due to some being in the shade.

SITE VISIT: 16/03/16 night view

Date:	16/03/16		Time [24h]:	21.00
Location:	Llandudno promenade by War Memorial		Height m AOD	6m
Eastings	Approx. 278200		Northings:	Approx. 382600
Distances [nearest] from windfarms	Gwynt y Mor: 16 km	North Hoyle: 25.7 km	Rhyl Flats: Around 11km	Burbo Bank: -
Weather Conditions	Mostly clear sky with some cloud, breezy			
Perceived Visibility	Good/Very good			
Light conditions	Dark, street, promenade and building lights apparent on almost three sides of the view.			
Commentary	**General:** The lights from both Gwynt y Mor and Rhyl Flats and probably North Hoyle windfarms can be seen and together covered around 70% of the visible horizon between the pier and Little Orme headland. 34 aviation navigation lights are visible. **Gwynt y Mor:** Description of effect: highly noticeable, covering a large proportion of the horizon. It forms a large cluster of red aviation lights with smaller but many more yellow/white navigation lights at the bases of the turbines. Scale of effect : moderate/large **North Hoyle:** Description of effect: just visible behind Rhyl Flats adding to the light Scale of effect : minor **Rhyl Flats:** Description of effect: noticeable aviation and navigation lights slightly more intense and extending the Gwynt y Mor array. Scale of effect : moderate/large **Burbo Bank:** Description of effect: not visible **Cumulative**: Description of effect: combined windfarms lights cover a large proportion of the horizon in the channelled view. The lights appear to form the edge of another coast with industrial installations. Though the lights of Llandudno surround the viewer on other sides of the view, these relate to the resort and have a different character. Scale of effect: large			
Photomontage comments/comparisons with site view and photos	No comparison available.			

APPENDIX B: Visibility definitions

Visibility definitions

Description	Range
Unknown	-
Very poor	Less than 1 km
Poor	Between 1-4 km
Moderate	Between 4-10 km
Good	Between 10-20 km
Very good	Between 20-40 km
Excellent	More than 40 km

Derived from Met Office onshore weather forecasts.

APPENDIX C: Magnitude of change definitions

Derived from DTI (2005).

Table 5: Magnitude of change: names, descriptors and definitions

Magnitude	Name	Descriptors - appearance in central vision field	Definition
Very Large	Dominant	Commanding, controlling the view, foremost feature, prevailing, overriding.	Proposed offshore wind farm causes very large alteration to key elements/features/characteristics of the baseline seascape or visual conditions (pre-development) such that there is a fundamental change.
Large	Prominent	Standing out, striking, sharp, unmistakeable, easily seen	Proposed offshore wind farm causes large alteration to key elements/ features/ characteristics of the baseline seascape or visual conditions (pre-development) such that there is an unmistakeable change.
Moderate	Conspicuous	Noticeable, distinct, catching the eye or attention, clearly visible, well defined	Proposed offshore wind farm causes moderate alteration to elements/features/characteristics of the baseline seascape or visual conditions (pre-development) such that there is a distinct change.
Small	Apparent	Visible, evident, obvious, perceptible, discernible, recognisable.	Proposed offshore wind farm causes small loss or alteration to elements/features/ characteristics of the baseline seascape or visual conditions (pre-development) such that there is a perceptible change.
Very Small	Inconspicuous	Lacking sharpness of definition, not obvious, indistinct, not clear, obscure, blurred, indefinite, subtle	Proposed offshore wind farm causes very small loss or alteration to elements/ features/ characteristics of the baseline seascape or visual conditions (pre-development) such that there is a barely distinguishable change.
Negligible	Faint	Weak, not legible, near limit of acuity of human eye	Proposed offshore wind farm causes negligible loss or alteration to elements/ features/ characteristics of the baseline seascape or visual conditions (pre-development) such that there is no legible change.

VIEWPOINT PHOTOGRAPHS

www.whiteconsultants.co.uk

Note: Photographs are reproduced to 260mm deep to give an impression of the scale of development that may be seen on site.

OS coordinates: approximately 276660 383405.

Approximate minimum distance to site: Gwynt y Mor- 16.2km

Project: **OESEA 3 seascape and visual buffers update**
Client: Hartley Anderson
Date: 8 April 2016
Status: Final

Figure
Great Orme, car park
Gwynt y Mor,Rhyl Flats and North Hoyle windfarms- part view

www.whiteconsultants.co.uk

Note: Photographs are reproduced to a size that fits the page and are not at a given scale.

OS coordinates: approximately 276660 383405.

Approximate minimum distance to site: Gwynt y Mor- 16.2km

Project: **OESEA 3 seascape and visual buffers update**
Client: Hartley Anderson
Date: 8 April 2016
Status: Final

Figure
Great Orme, car park
Gwynt y Mor,Rhyl Flats and North Hoyle windfarms

www.whiteconsultants.co.uk

Note: Photographs are reproduced to 260mm deep to give an impression of the scale of development that may be seen on site.

OS coordinates: approximately 278200 382600

Approximate minimum distance: Gwynt y Mor- 16.2km

Project: **OESEA 3 seascape and visual buffers update**
Client: Hartley Anderson
Date: 8 April 2016
Status: Final

Figure
Llandudno promenade by Memorial Gwynt y Mor and Rhyl Flats windfarms

www.whiteconsultants.co.uk

Note: Photographs are reproduced to a size that fits the page and are not at a given scale.

OS coordinates: 278200 382600

Approximate minimum distance to site: Gwynt y Mor 16.2km

Project: **OESEA 3 seascape and visual buffers update**
Client: Hartley Anderson
Date: 8 April 2016
Status: Final

Figure
Llandudno promenade by Memorial
Gwynt y Mor and Rhyl Flats windfarms

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Note: Photographs are reproduced to 260mm deep to give an impression of the scale of development that may be seen on site.

OS coordinates: approximately 284310 380810.

Approximate minimum distance to site: Gwynt y Mor- 14.3km, Rhyl Flats- c.8km, North Hoyle 20.8km

Project: **OESEA 3 seascape and visual buffers update**
Client: Hartley Anderson
Date: 8 April 2016
Status: Final

Figure
Rhos-on Sea
Gwynt y Mor, Rhyl Flats and North Hoyle windfarms

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Note: Photographs are reproduced to a size that fits the page and are not at a given scale.

OS coordinates: approximately 284310 380810.

Approximate minimum distance to site: Gwynt y Mor- 14.3km, Rhyl Flats- c.8km, North Hoyle 20.8km

Project: **OESEA 3 seascape and visual buffers update**
Client: Hartley Anderson
Date: 8 April 2016
Status: Final

Figure
Rhos-on Sea
Gwynt y Mor, Rhyl Flats and North Hoyle windfarms

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Note: Photographs are reproduced to 260mm deep to give an impression of the scale of development that may be seen on site.

OS coordinates: approximately 306235 383835.

Approximate minimum distance: Gwynt y Mor- 12.6km, North Hoyle- 7.8km

Project: **OESEA 3 seascape and visual buffers update**
Client: Hartley Anderson
Date: 8 April 2016
Status: Final

Figure
Nova Centre, Prestatyn
Gwynt y Mor and North Hoyle windfarms part of array

www.whiteconsultants.co.uk

Note: Photographs are reproduced to a size that fits the page and are not at a given scale.
Locations of the development site are estimated and do not infer visibility from the viewpoint.

OS coordinates: approximately 306235 383835.

Approximate minimum distance: Gwynt y Mor- 12.6km, North Hoyle- 7.8km

Project: **OESEA 3 seascape and visual buffers update**
Client: Hartley Anderson
Date: 8 April 2016
Status: Final

Figure
Nova Centre, Prestatyn
Gwynt y Mor,Rhyl Flats and North Hoyle windfarms

Appendix I East coast site visits 2019

Offshore Energy Strategic Environmental Assessment

Review and update of Seascape and Visual Buffer study for Offshore Wind farms

APPENDIX: EAST COAST SITE VISITS

for

Hartley Anderson

October 2019

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with

Northumbria University

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1. Introduction

1.1. The east of England coast was visited in October 2019 to explore a range of issues in terms of the visibility and visual intrusion of existing offshore windfarms. At this time there are a number of windfarms are different sizes at different distances from the coast. The main objective was to look at the visibility of those wind turbines further offshore. Two main groups were assessed:

- Off the north Norfolk coast: Race Bank, Sheringham Shoal and Dudgeon wind farms
- Off the Suffolk and Essex coast: Greater Gabbard/Galloper, London Array, East Anglia 1 and Gunfleet arrays.

2. Method

2.1. The area was visited on two days (separated by a rainy day) – 23rd and 25th October 2019 and one viewpoint, at Aldeburgh, was visited at night on 24th October. Overall, the visibility ranged from poor through to good and very good visibility (see **Appendix I/A** for ranges). However, the days were generally cloudy with little sunshine and where this occurred it was patchy. Therefore no windfarms were viewed with full sun on them. In most views the backcloth to the turbines was grey and only occasionally was there a light sky backcloth on the horizon.

2.2. The photos taken do not reflect the visibility of the wind turbines due to limitations of photographic resolution. The observer's naked eye was able to pick up wind turbines at some distance (35km +) although the contrast between them and the backcloth was limited due to weather conditions. The viewpoints visited were for the most part assessed as part of seascape and visual impact assessments (SVIAs) for the relevant windfarms. These included:

- Wells-next-the-Sea beach
- Beeston Bump, near Sheringham
- Aldeburgh seafront
- Old Felixstowe seafront
- Holland-on-Sea seafront

2.3. The viewpoint visited at night to establish the effect of lighting was:

- Aldeburgh seafront (from building in street behind)

2.4. Photographs were taken at each viewpoint using a Canon EOS 6D 18MP full frame digital SLR with a fixed 50mm Canon lens on a tripod. At each viewpoint photographs were taken over a period of between 15 and 90 minutes to optimise the potential visibility. Observations of visibility of wind farms were made and conclusions on visual impact drawn *based on weather conditions at the time*. For each viewpoint, the SVIA assessment is summarised for comparison. The approach by SVIA assessors vary from assessing the worst case/excellent visibility through to averaging the worst and most common case. SVIA photomontages were not available for most of the viewpoints. As such, it is useful to view the site visual assessment of windfarms of the North Wales coast in April 2016. The observations were made by a chartered landscape architect with over 30 years landscape planning experience including LVIAs/SVIAs. The record of each

assessed viewpoint is set out in **Appendix I/A with photos in Appendix I/B.** The definitions for scale of effect are as set out for magnitude of change in DTI (2005). This is consistent with the approach taken for assessing the wireframes.

Visibility definitions for weather are as follows based on Met Office weather records:

Table 1 Visibility definitions

Description	Range
Unknown	-
Very poor	Less than 1 km
Poor	Between 1-4 km
Moderate	Between 4-10 km
Good	Between 10-20 km
Very good	Between 20-40 km
Excellent	More than 40 km

3. Observations and Conclusions

3.1. The following observations were made:

- The assessment during late October with visibility conditions only good and very good at best and little sun meant that the windfarms were not viewed in the worst case situation. The conditions prevailing were likely to be typical of various times of day and year though with an expectation of both worse and better visibility.
- Different weather conditions had significant effects on the visibility of turbines on the site visits. When sunlight was on individual turbines, especially when behind the viewer, they were visible from long distances eg 33km at Dudgeon. Conversely, in overcast and misty conditions turbines at 17km were difficult to see. It was observed that there were variations across the windfarms in variable conditions with some turbines in shade beneath or within cloud, while others were in very limited sun. Therefore, the windfarm turbines did not appear to be as a strong coherent group in these variable conditions. The closer the windfarm, the less this effect changed the perception of the windfarm eg 9km and 17km compared to 24-33km.
- From the higher viewpoints, the windfarms looked more coherent as the whole of the wind farm and their layout could be seen against the slighter darker sea area (Sheringham Shoal and Gunfleet).
- From the lower viewpoints, the layout of the windfarm was less easy to comprehend than when viewed from higher viewpoints although straight rows and stacking were still apparent (London Array).
- The digital SLR lens photographs made the windfarm look smaller and less distinct than when viewed in real life.
- The juxtaposition of close inshore and offshore windfarms is visually disruptive although it is clear that there is physical separation (London Array and Gunfleet).
- The SVIA judgements of Gunfleet II are based on the existence of Gunfleet I, with reduced levels of effects. The combined cumulative effect is not addressed. Gunfleet I SVIA is not available.

- The SVIA judgements of London Array are lower than may be expected. These partly rely on the presence of ship traffic into Felixstowe and Harwich and the existence of Gunfleet I/II closer inshore from some viewpoints. The combined cumulative effect is not addressed.
- Currently there is visual separation between wind farms on the north coast of Norfolk so they appear as separate coherent groups. This is a positive feature.
- At night, in very good weather conditions, navigational lighting on each turbine was just visible on the horizon at 33km in the case of Greater Gabbard/Galloper. As an isolated group on the horizon this was not a significant effect.

APPENDIX I/A: OESEA Update Seascape Site Visits Records: East coast of England

Site visits to assess existing offshore wind farms off the East coast of England

Places visited:

- Wells-next-the-Sea and Sheringham- 23 October 2019
- Aldeburgh, Felixstowe and Holland-on-Sea- 25 October 2019

Dudgeon		**SVIA 2009 Assessed:** No. of turbines: 168- 56 Height to blade tip: 115-190m Output: 3MW-10MW				**Constructed:** No. of turbines: 67 Height to blade tip: 187m (154m blade diameter) Hub height: 110m Output: 6MW (Siemens)			
Vpt No.	**Location**	**Developer's SVIA**				**This review**			
		Distance To Nearest Turbine (Km)	**Sensitivity**	**Mag Of Effect**	**Signif-icance**	**Sensitivity**	**Mag Of Effect**	**Signif-icance**	**Comments**
									Overall weather conditions: visibility good to very good, cloudy but with some sunshine- arrays not highlighted in full- just in part. Occasional sea mist.
5: 3MW layout	Beeston Bump	33	Very high	Very small	Minor				
5: 10MW layout	Beeston Bump	33	Very high	Very small	Moderate/ minor				
5: 6MW layout constructed	Beeston Bump (summit)	33				Very high/ high	Very small	Moderate/ minor	Not significant. Turbines are visible in very good visibility but are indistinct/light grey when no sun on them and light sky backcloth. The size of turbines are very small and appear distant. Not visible in moderate or good visibility. (Not worst case scenario as visibility not excellent).

Sheringham Shoal		**SVIA 2015 Assessed:** No. of turbines: 88 Height to blade tip: 117-172m max Output: 3-6MW?				**Constructed:** No. of turbines: 88 Height to blade tip: 135m Output: 3.6MW			
Vpt No.	**Location**	**Developer's SVIA**				**This review**			
		Distance To Nearest Turbine (Km)	**Sensitivity**	**Mag Of Effect**	**Signif-icance**	**Sensitivity**	**Mag Of Effect**	**Signif-icance**	**Comments**
									Overall weather conditions: visibility good to very good, cloudy but with some sunshine- arrays not highlighted in full- just in part. Occasional sea mist.
2	Wells-next-the Sea (beach)	25	High	Low	Minor	Very high	Small	Major/ moderate to moderate	Significant. The turbines are apparent in very good visibility and especially with sun on them with movement of blades visible. The size of turbines are small. Not visible in moderate visibility with sea mist. Slightly oblique view. (Not worst case scenario as visibility not excellent).
3	Beeston Hill (summit)	17	High	High	Major	Very high/ High	Moder-ate	Major	Significant. The turbines are noticeable in good to very good visibility without sun and very noticeable with part sun on them with movement of blades highly visible. (Full sun on array not seen). The size of turbines are medium. Not visible in moderate/poor visibility with sea mist. Slightly oblique view. (Not worst case scenario as visibility not excellent and not full sun from behind viewer). Therefore SVIA is likely to be correct in magnitude for worst case.

Race Bank		**SVIA 2009 Assessed:** No. of turbines: 88-206 Height to blade tip: 135-180m Hub height: 90-100m Base diameter: 6m tapering to 4.5m at top Output: 3-6MW				**Constructed:** No. of turbines: 91 Height to blade tip: 187m like Dudgeon? Hub height: 110m like Dudgeon? Blade Dia: 154m Output: 6MW (Siemens SWT-6.0 154)			
Vpt No.	**Location**	**Developer's SVIA**				**This review**			
		Distance To Nearest Turbine (Km)	**Sensitivity**	**Mag Of Effect**	**Signif-icance**	**Sensitivity**	**Mag Of Effect**	**Signif-icance**	**Comments**
									Overall weather conditions: visibility good to very good, cloudy but with some sunshine- arrays not highlighted in full- just in part. Occasional sea mist.
8 viewpoints (only NTS available)	North Norfolk and Lincolnshire	27km closest	Not available	Not avail-able	Minor at most (all beyond the limit of visual signif-icance)	-	-	-	Note: Docking Shoal is closer and in front of the array for some viewpoints such as Brancaster Bay which is illustrated by a photomontage. However, it is assumed that Docking Shoal is not considered as part of baseline assessment as it is also going through the application process at the time of this SVIA.
-	Wells-next-the Sea (beach)	27-30	See above	See above	See above	Very high	Very small	Moderate	Not significant. The turbines are just visible in very good visibility but are very indistinct/light grey when no sun on them and light sky backcloth. The size of turbines are very small and appear distant. Not visible in moderate or good visibility. (Not worst case scenario as visibility not excellent).

Greater Gabbard		**SVIA Assessed:** No. of turbines: 141 Height to blade tip: 170m max Output: 6MW?				**Constructed:** No. of turbines: 140 Height to blade tip: 131m Output: 3.6MW			
Vpt No.	**Location**	**Developer's SVIA**				**This review**			
		Distance To Nearest Turbine (Km)	**Sensitivity**	**Mag Of Effect**	**Signif-icance**	**Sensitivity**	**Mag Of Effect**	**Signif-icance**	**Comments**
									Overall weather conditions: Aldeburgh: visibility good to very good in early morning, cloudy but with some sunshine in patches, with sun low in the sky over the sea to east - arrays not highlighted in full- just occasionally in small part. Occasional sea mist offshore enveloping array. Felixstowe: visibility good to very good in mid-morning, generally cloudy and grey but with some very limited sunshine in patches- arrays not highlighted in full- just occasionally in small part. Occasional sea mist offshore enveloping arrays.
2	Old Felixstowe seafront	33.5 (to 49km for furthest turbine)	High	Moderate to subst-antial in excellent visibility. None in moderate visibility.	Moder ate to major. Minor to none as largely indistin ct. Not signific ant.	High	Very small/ neglig-ible	Minor	Not significant *in weather conditions*. The windfarm was only visible for short periods of time with the turbines generally light grey against the light morning sky on the horizon, when visible. Turbines and bottom of blades, partially obscured by curvature of the Earth. Turbine blade movement was not apparent.
3	Aldeburgh seafront	29 (to 52km for furthest turbine)	High	Occasion-ally substant-ial ,	Major to minor or	High	Very small	Moderate/ minor	Not significant *in weather conditions.* The windfarm was only visible for short periods of time with the turbines generally grey against the light morning

				generally negligible.	none. Not significant.				sky on the horizon, when visible. Turbines further away partially obscured by curvature of the Earth. Turbine blade movement was not apparent. (Note that Galloper forms part of the array visible from Aldeburgh).
-	Holland on Sea	45	-	-	-	-	-	-	Not visible.

London Array		**SVIA 2005 Assessed:** No. of turbines: upto 271 Height to blade tip: upto 175m Output: upto 6MW?				**Constructed:** No. of turbines: 175 Height to blade tip: 147m Hub height: 87m Rotor diameter 120m Output: 3.6MW			
Vpt No.	**Location**	**Developer's SVIA**				**This review**			
		Distance To Nearest Turbine (Km)	**Sensitivity**	**Mag Of Effect**	**Signif-icance**	**Sensitivity**	**Mag Of Effect**	**Signif-icance**	**Comments**
									Overall weather conditions: Felixstowe: visibility good to very good in mid-morning, generally cloudy and grey but with some very limited sunshine in patches- arrays not highlighted in full- just occasionally in small part. Occasional sea mist offshore enveloping arrays. Holland on Sea: visibility good with part of the view very good in late-morning, generally cloudy and grey with some light over the sea behind the nearer turbine arrays but cloud and mist enveloping most of the further arrays.
25	Holland-on-Sea	24	Medium	Low to negligible	Negligible	High/ medium	Medium/ small	Moderate	Not significant *in weather conditions*. The windfarm was only visible for short periods of time. Noticeable with the turbines in clear linear pattern- straight rows with some stacking and between light and dark grey tone against cloudy horizon. Full height of turbines fully visible-possibly a function of the height of the viewpoint. Turbine blade movement was apparent. Gunfleet, 1, 2 and 3 arrays are in the view closer to, so this reduces the degree of expected change-this is mentioned in SVIA and results in SVIA judgement of negligible significance.

33	Felixstowe seafront (Cobbolds Point)	31	Medium	Negligible	Neglig-ible	High/ medium	Very small		Not significant *in weather conditions*. The windfarm was only visible for short periods of time with the turbines generally dark grey against the grey sky on the horizon, when visible. Turbines and bottom of blades, partially obscured by curvature of the Earth. Turbine blade movement was difficult to discern in the light conditions. Sea traffic into ports of Felixstowe and Harwich apparent in middle ground. SVIA minimises effects partly by referral to sea traffic so is not a measure of perceived size and effect of turbines alone.

Gunfleet Sands		**Gunfleet 1 SVIA Assessed 2003:** No. of turbines: 30 Height to blade tip: 131-147m? Output: 3.6MW **Gunfleet 2 SVIA Assessed 2007-8:** No. of turbines: 18 Height to blade tip: 131-147m? Output: 3.6MW **Gunfleet 3 SVIA Assessed 2011:** No. of turbines: 2 Height to blade tip: 187m? Output: 6MW				**Constructed:** As assessed.			
Vpt No.	**Location**	**Developer's SVIA**				**This review**			
		Distance To Nearest Turbine (Km)	**Sensitivity**	**Mag Of Effect**	**Signif-icance**	**Sensitivity**	**Mag Of Effect**	**Signif-icance**	**Comments**
									Overall weather conditions: Holland on Sea: visibility good with part of the view very good in late-morning, generally cloudy and grey with some light over the sea behind the turbine arrays. No sun on turbines.
	Radar tower , Holland Haven	8.3	Medium-low	Medium-low	Moder ate-minor	-	-	-	Takes Gunfleet 1, which is largely in front of this array, into account as part of the baseline and therefore is an additional effect. Therefore the effect is smaller than it would be if considered together.
	Holland-on-Sea seafront path	9	-	-	-	High/ medium	Moderat e/ minor (addition al) Large (combin ed cumulati ve)	Mod-erate	*As an addition* to the Gunfleet 1 array the turbines extend the array to the east reducing the coherence of the original layout as only two rows extend in this direction. However, the consented first phase is closer to the shore with the greater number of turbines and therefore has a larger effect. The *combined* cumulative magnitude effect of the three phases (actually implemented together) is large. The array is highly rectilinear in rows with stacking and dominates the sea view. Significant.

East Anglia 1		SVIA 2011 Assessed: No. of turbines: 102 Height to blade tip: 160-195m max Hub height: 120m min Base diameter: 5-8.5m tapering to 3.5-5m at top Output: 6, 7.5, 10MW				Under construction (one third erected at time of assessment): No. of turbines: 102 Height to blade tip: 167m 154m diameter blade? Hub height: 90m Base diameter: Output: 7MW			
Vpt No.	**Location**	**Developer's SVIA**				**This review**			
		Distance To Nearest Turbine (Km)	**Sensitivity**	**Mag Of Effect**	**Signif-icance**	**Sensitivity**	**Mag Of Effect**	**Signif-icance**	**Comments**
									Overall weather conditions: visibility good to very good in early morning, cloudy but with some sunshine in patches, with sun low in the sky over the sea to east.
		Scoped out as nearest coast at 43.4km is beyond 40km study area ('based on DTI guidance')							
	Aldeburgh seafront	55km minimum-not known where constructed turbines are.	-	-	-	-	-	-	Not visible

APPENDIX I/B: Sample Viewpoint Photographs

www.whiteconsultants.co.uk

Note: Photographs are reproduced to 260mm deep to give an impression of the scale of development that may be seen on site.

OS coordinates: approximately

Approximate minimum distance to wind farm: Sheringham Shoal- 17 km

Project: **OESEA seascape and visual buffers update**
Client: Hartley Anderson
Date: 24 October 2019
Status: Final

Figure
Beeston Bump, Sheringham
Sheringham Shoal wind farm

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Note: Photographs are reproduced to 260mm deep to give an impression of the scale of development that may be seen on site.
OS coordinates: -
Approximate minimum distance to wind farms:
Dudgeon- 33km
Sheringham Shoal- 17 km

Project: **OESEA seascape and visual buffers update**
Client: Hartley Anderson
Date: 24 October 2019
Status: Final

Figure
Beeston Bump, Sheringham
Dudgeon wind farm (to right)
Sheringham Shoal (to left)

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Note: Photographs are reproduced to 260mm deep to give an impression of the scale of development that may be seen on site.
OS coordinates: -
Approximate minimum distance:
Greater Gabbard- 29km

Project: **OESEA seascape and visual buffers update**
Client: Hartley Anderson
Date: 24 October 2019
Status: Final

Figure
Behind Aldeburgh seafront
Greater Gabbard/Galloper windfarms

www.whiteconsultants.co.uk

Note: Photographs are reproduced to a size that fits the page and are not at a given scale.
OS coordinates: -
Approximate minimum distance to site:
Gunfleet Sands- 9km
London Array- 24km

Project: **OESEA seascape and visual buffers update**
Client: Hartley Anderson
Date: 25 October 2019
Status: Final

Figure
Holland-on-Sea coastal path
Gunfleet Sands and London Array windfarms

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Appendix 3
JNCC (2010)

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Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise

August 2010

Introduction

This document, which has been produced by Natural England, the Countryside Council for Wales and the Joint Nature Conservation Committee, outlines a protocol for the mitigation of potential underwater noise impacts arising from pile driving during offshore wind farm construction. This protocol may also be useful to other industries in the marine environment which use pile driving. The agencies recommend that all operations that include pile driving should consider producing an Environmental Management Plan (EMP), or an equivalent document that meets the requirements of the relevant regulator.

The nature conservation agencies' policies support appropriately sited offshore renewable energy developments because they can provide environmental benefits to species of conservation concern, including marine mammals, by reducing greenhouse gas emissions and mitigating adverse climate change impacts. However, these developments can adversely affect species and features of conservation importance, including those protected by European and domestic Law. Mitigation of such impacts forms an intrinsic part of the Environmental Impact Assessment (EIA) process required as part of the consenting process for offshore windfarms.

The installation of driven piles in the marine environment without mitigation is likely to produce noise levels capable of causing injury and disturbance to marine mammals. Such effects, although incidental to consented activities, have the potential to conflict with the legislative provisions of The Conservation of Habitats and Species Regulations 2010 (the 'Habitats Regulations', HR), which applies to English and Welsh waters inside 12 nautical miles (nm), and the Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (the 'Offshore Marine Regulations', OMR, as amended 2009 and 2010), which apply on the United Kingdom Continental Shelf.

JNCC, NE and CCW have produced guidance on 'the protection of marine European protected species from injury and disturbance'. The piling protocol forms part of that more general guidance and the recommendations should be considered as 'best practice' for piling operations.

JNCC notes that other protected fauna, for example turtles, occur in waters where these guidelines may be used, and would suggest that, whilst the appropriate mitigation may require further investigation, the protocols recommended for marine mammals would also be appropriate for marine turtles and basking sharks[1].

Scientific understanding of the issues discussed in this piling protocol is incomplete, but improving. It is therefore important to note that the piling protocol is not considered to be static policy and will be subject to regular revision following on from experience of its use, and the development of a better understanding of the efficacy of certain mitigation measures recommended in the protocol.

Pile driving in the marine environment without mitigation is likely to produce noise levels capable of inducing adverse avoidance reactions at a considerable distance from the activity, which could constitute disturbance under the Regulations (HR and OMR depending on the area). Pile driving is also likely to cause injuries (e.g. hearing impairment) and there remains the possibility of causing death in marine mammals that are in very close proximity.

This protocol does not document measures to mitigate disturbance effects, but has been developed to reduce to negligible levels the potential risk of injury or death to marine mammals in close proximity to piling operations.

If the risk of disturbance cannot be avoided or reduced to negligible levels, the developers need to obtain a licence under regulations 53/49 (HR/OMR respectively) in order to avoid the application of regulations 41(1)(b) and 39(1)(b) of the HR/OMR.

[1] Basking sharks are protected from intentional capture or disturbance in British waters (up to 12 miles offshore) under a 1998 listing on the Wildlife and Countryside Act (1981), Schedule 5.

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Terminology

Marine European Protected Species: These are marine species in Annex IV(a) of the Habitats Directive that occur naturally in the waters of the United Kingdom. These consist of several species of cetaceans (whales, dolphins and porpoises), turtles, and the Atlantic Sturgeon.

Marine Mammal Observer (MMO): Individual responsible for conducting visual watches for marine mammals. It may be requested that observers are trained, dedicated and/or experienced. The MMO may also be a PAM operative.

- **Trained MMO**: Has been on a JNCC recognised course

- **Dedicated MMO**: Trained observer whose role on board is to conduct visual watches for marine mammals (although it could double up as a PAM operative)
- **Experienced MMO**: Trained observer with 3 years of field experience observing for marine mammals, and practical experience of implementing the JNCC guidelines
- **PAM Operative**: Person experienced in the use of PAM software and hardware and marine mammal acoustics

Mitigation Zone: The area where a Marine Mammal Observer keeps watch for marine mammals (and delays the start of activity should any marine mammals be detected).

Passive Acoustic Monitoring (PAM): Software system that utilises hydrophones to detect the vocalisations of marine mammals.

Section 1 - The Standard Piling Protocol

The standard protocol should be recommended to developers as a minimum level of good practice to mitigate the potential for causing injury or death to marine mammals in close proximity to piling operations.

Many of the techniques in the standard piling protocol have their origins in the 'JNCC seismic guidelines'. As the levels of noise associated with seismic survey can, in some cases, be similar to those likely to arise from piling operations, it is appropriate to adopt comparable mitigation measures. Additionally, many of the elements of the protocol have already been incorporated as FEPA licence conditions for Round 1 and 2 offshore windfarms, following advice provided by the statutory nature conservation agencies (Section 5).

1.1 The planning stage

The developer should consult JNCC, NE and CCW guidance on 'the *protection of marine European Protected Species from injury and disturbance*' to assist in environmental impact assessment.

The recommendations detailed below should be considered by the developer during the planning stage and be incorporated into the project's Environmental Management Plan or the equivalent document required by the relevant regulator.

1.1.1 Developer to demonstrate that Best Available Technique (BAT) is being used

BAT, which incorporates the previous concept of BATNEEC (Best Available Technique Not Entailing Excessive Cost), is an established approach in environmental management. It seeks to balance the highest level of environmental protection against commercial affordability and practicality.

The demonstration of BAT may require developers to submit commercially sensitive information to the agencies. For example, the costing of different pile construction

techniques is likely to be confidential. There may, understandably, be concerns about this process and, in such cases, the agencies will agree an approach with the developers and the regulators (currently the MMO for offshore windfarm developments covered by this protocol) to regulate this process.

Techniques such as hammer modifications, sleeving or muffling, the use of vibratory hammers and gravity based piling may all reduce noise levels. The developer may be able to demonstrate that certain installation approached do not amount to BAT, and this can be achieved by submitting a detailed business case involving analysis of cost and impact on margins. The use of gravity base piles is particularly notable, because potential noise impacts area likely to be much reduced. In contrast, the COWRIE work has gone some way to demonstrate that the use of unenclosed bubble curtains, bubble trees[2] or enclosure coffer dams[3] is currently ineffective or uneconomical.

1.1.2 Consideration of the local environment

The developer must determine what marine mammal species are likely to be present in the area and assess if there are any seasonal considerations that need to be taken into account. Seasonal restrictions on piling operations may be necessary. For example this may be appropriate during periods of seal pupping, and when there is clear seasonal demarcation in animal occurrence and seasonal restrictions would have practical application[4]. The interaction with other potential spatial and temporal restrictions on construction times (for example in spring to mitigate impacts on commercial fish spawning or during winter to reduce impacts on certain seabirds) would also need to be considered.

1.2 Role of the Marine Mammal Observer (MMO)

Operators should seek to provide dedicated MMOs and Passive Acoustic Monitoring (PAM) operatives. Piling activities should be monitored by MMOs and PAM operatives whose primary role is to detect marine mammals and to potentially recommend a delay in the commencement of piling activity if any marine mammals are detected. In addition, the MMO / PAM operatives should be able to advise the crew on the implementation of the procedures set out in the agreed mitigation protocol, to ensure compliance with those procedures.

1.2.1 Training requirements for MMOs

MMOs should be appropriately trained and understand the mitigation procedures within the piling protocol. MMOs should be present in sufficient numbers to ensure that monitoring is not compromised by fatigue. They should ensure they receive a copy of the mitigation procedures requested by the regulating authority as they may

[2] Bubble curtains and bubble trees release streams of bubbles into the water column - because of tidal flows such bubbles are likely to dissipate in the environments associated with offshore windfarms.

[3] Not commercially feasible currently because of the time taken to install them, particularly in the offshore environment.

[4] Seasonal restrictions which would restrict piling for large parts of the year and which might therefore make a project uneconomic may not be welcomed by the operator. In such cases where the impact assessments showed risk of a disturbance offence, the operator may wish to consider alternative methods, for example such as the use of gravity piles.

vary between activities. JNCC has approved a number of MMO course providers[5] – although the courses they run deal primarily with the seismic guidelines, the skills are easily transferable to the monitoring of piling activities.

1.2.2 Equipment required by the MMO

MMOs should be equipped with binoculars, a copy of the agreed monitoring protocol and the 'Marine Mammal Recording Form', which is an Excel spreadsheet containing embedded worksheets named 'Cover Page', 'Operations', 'Effort' and 'Sightings'. A Word document named 'Deck forms' is also available, and MMOs may prefer to use this when observing before transferring the details to the Excel spreadsheets. Although these forms were developed for seismic surveys, they can be used for piling operations, although many columns will not be applicable.

The ability to determine range of marine mammals is a key skill for MMOs, and a useful tool is a range finding stick. All MMO forms, including a guide to completing the forms, and instructions on how to make and use a range finding stick, are available on the JNCC website.

1.3 Passive Acoustic Monitoring (PAM) and PAM operatives

PAM systems consist of hydrophones that are deployed into the water column, and the detected sounds are processed using specialised software. PAM operatives are needed to set up and deploy the equipment, and to interpret the detected sounds. A PAM operative could also be a trained MMO, and this would allow them to switch roles, if required, between acoustic and visual monitoring (providing that there is another trained PAM operative available). Switching roles between acoustic and visual monitoring could help alleviate observer fatigue.

In its current state of development, PAM systems are particularly useful in detecting harbour porpoises within a 500 metre mitigation zone, although the systems have their limitations and can only be used to detect vocalising species of marine mammals.

PAM can provide a useful supplement to visual observations undertaken by MMOs and the agencies may recommend that it is used as a mitigation tool when commenting on applications for piling consents. However, in many cases it is not as accurate as visual observation for determining range, and this will mean that the mitigation zone will reflect the range accuracy of the system. For example, if the range accuracy of a system is estimated at +/-300 metres, animals detected and calculated to be within 500 metres from the source could, in reality, be 500 + 300 = 800 metres, but their detection would still lead to a delay in the soft-start. Although, at present it is not possible to express the range accuracy of most PAM systems in numerical terms, this example serves to illustrate that it is in the developer's best interests to use the most accurate system available, and for the PAM operative to factor in a realistic estimate of the range accuracy.

[5] The JNCC website has a list of MMO course providers: http://www.jncc.gov.uk/page-4703

1.4 Communication

At the planning stage the communication channels between those providing the mitigation service and the crew working on the piling are to be established. The MMO and PAM operatives also have to ensure there is a workable communication procedure in place so that any visual and acoustic detections can be corroborated by both. In addition, a formal chain of communication from the MMO or PAM operative to the person who can start/stop piling operations must be established. This is important, because construction contractors working to a tight timetable may not fully appreciate the roles and responsibilities of the MMO and PAM operatives. In order to establish the chain of communication and command MMOs and PAM operatives should attend any relevant pre-mobilisation meetings.

1.5 Mitigation zone

It is necessary to establish a "mitigation zone" of a pre-agreed radius around the piling site prior to any piling. This is an area in which the MMO / PAM operative will monitor either visually and/or acoustically for marine mammals before piling commences. The extent of this zone should be considered during the environmental impact assessment and agreed with the regulatory authority.

The extent of this zone represents the area in which a marine mammal could be exposed to sound that could cause injury and will be determined by factors such as the pile diameter, the water depth, the nature of the activities (for example whether drilling will also take place) and the effect of the substrate on noise transmission. The radius of the mitigation zone should be no less than 500 metres, and this is measured from the pile location (figure 1). The MMO and PAM operative should be located on the most appropriate viewing platform (e.g. vessel) to ensure effective coverage of the mitigation zone. The MMO will also require a platform that provides a good all-round view of the sea.

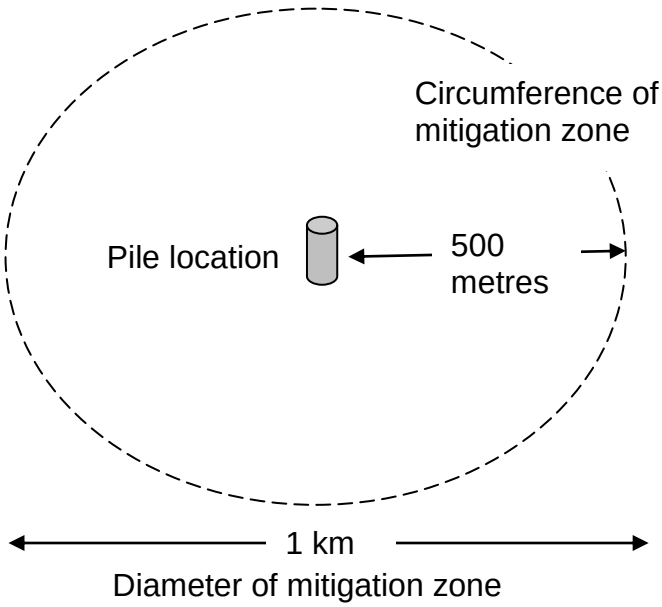

Figure 1: A representation of the mitigation zone, this is measured from the location of the pile to be installed out to a distance of 500 metres.

Section 2 – Advice during the piling activity

The following recommendations are relevant during piling operations.

2.1 Piling at night or poor visibility

Piling should not be commenced during periods of darkness or poor visibility (such as fog), or during periods when the sea state is not conducive to visual mitigation (above Sea State 4[6]), as there is a greater risk of failing to detect the presence of marine mammals. Variations to this restriction on commercial grounds are discussed in section 4.

2.2 Pre-Piling Search

The mitigation zone should be monitored visually by MMOs and/or acoustically using PAM for an agreed period prior to the commencement of piling. It is recommended that the pre-piling search duration should be a minimum of 30 minutes[7].

2.3 Delay if marine mammals detected within mitigation zone

Piling should not be commenced if marine mammals are detected within the mitigation zone or until 20 minutes[8] after the last visual or acoustic detection. The MMO and PAM operative should track any marine mammals detected and ensure they are satisfied the animals have left the mitigation zone before they advise the crew to commence piling activities.

2.4 Soft-Start of pile driver

The soft-start is the gradual ramping up of piling power, incrementally over a set time period, until full operational power is achieved. The soft-start duration should be a period of not less than 20 minutes[9]. It is believed that by initiating piling at a lower power this will allow for any marine mammals to move away from the noise source, and reduce the likelihood of exposing the animal to sounds which can cause injury. Soft-start noise levels will vary according to hammer and pile design and other factors, and should be assessed as part of the environmental impact assessment process. Developers might want an alternative soft-start duration depending upon the

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[6] Detection of marine mammals, particularly porpoises, will decrease as sea-state increases. While ideally sea-states of 2 or less, are required for optimal visual detection the risks of not detecting individuals within the MZ should be reduced by the combined use of visual monitoring and PAM.

[7] This 30 minute period is used in the JNCC seismic survey guidance

[8] A 20 minute period is adopted by the JNCC seismic survey guidance. Issues of swimming speed and noise dosage are considered in the Thame Developer report - it is considered that twenty minutes is a sufficient period of time to allow individuals to be at a distance where risk of injury or death is minor.

[9] The details of soft-start will vary according to substrate type, pile design and the hammer utilised. Measurements from the Lynn and Inner Dowsing test pile suggest that while “soft-start” levels are considerably lower than those occurring during full power piling they are still capable of giving rise to injury. Details of the soft-start procedure should be obtained for each project (see draft FEPA conditions Section 5).

specifics of the project and outcomes of the EIA process; any requested variation from a 20 minute soft-start should be agreed with the relevant agency and regulator.

If a marine mammal enters the mitigation zone during the soft-start then, whenever possible, the piling operation should cease, or at the least the power should not be further increased until the marine mammal exits the mitigation zone, and there is no further detection for 20 minutes. The feasibility of this approach should be agreed with the relevant agency and regulator as part of the approval process. It is recognised that the ability to cease operations may be constrained by the substrate type or pile design.

When piling at full power, there is no requirement to cease piling or reduce the power if a marine mammal is detected in the mitigation zone (it is deemed to have entered "voluntarily"[10]). It is also acknowledged that, for engineering reasons, it may not be possible to stop piling at full power until the pile is in final position.

2.5 Break in piling activity

If there is a pause in the piling operations for a period of greater than 10 minutes, then the pre-piling search and soft-start procedure should be repeated before piling recommences. If a watch has been kept during the piling operation, the MMO or PAM operative should be able to confirm the presence or absence of marine mammals, and it may be possible to commence the soft-start immediately. However, if there has been no watch, the complete pre-piling search and soft-start procedure should be undertaken.

2.6 Acoustic Deterrent Devices (ADDs)

The use of devices that have the potential to exclude animals from the piling area should be considered. Acoustic Deterrent Devices (ADDs) should only be used in conjunction with visual and / or acoustic monitoring.

In theory, ADDs have the potential to reduce the risk of causing injury to marine mammals, and are relatively cost effective. However, evidence relating to the efficacy of acoustic deterrents such as "scrammers" or "pingers" is currently limited and there is a need for studies to quantify the efficacy of candidate devices to determine their applicability as suitable mitigation measures.

When planning to use ADDs, the potential effectiveness of candidate devices on the key marine mammal species likely to be present in the area should be assessed as part of the EIA process for the activity. This assessment should feed into the site specific Environmental Management Plan (EMP) or equivalent. It is expected that these devices would always be used in accordance with recommended conditions that would prevent the exposure of animals to disturbance that would constitute an offence under regulations 41 and 39 of the Habitats Regulations and the Offshore Marine Regulations, respectively. It should be noted that a wildlife licence under the

[10] Please note that there is no scientific evidence for this "voluntary" hypothesis, instead it is based on a common sense approach. Note, however, that other factors, such as food availability, may result in marine mammals approaching piling operations. In particular, the availability of prey species stunned by loud underwater noise may attract seals into the vicinity of piling operations.

Wildlife and Countryside Act 1981 (within 12nm) might be required to authorise a potential intentional disturbance.

The use of ADDs will be subject to a number of recommended conditions, for example:

- ADDs should be positioned in the water in close proximity to the pile to be installed; the vessel with the MMOs and PAM operatives may not necessarily be a suitable mooring location for these devices.
- ADDs should be switched on throughout the pre-piling search and turned off immediately after the piling activity has started.

Section 3 – After the piling activity

3.1 Reporting Requirements

Reports detailing the piling activity and marine mammal mitigation, the 'MMO and PAM reports', should be sent to the relevant conservation agency after the end of the piling activity. Reports should include:

- Completed Marine Mammal Reporting Forms
- Date and location of the piling operations
- A record of all occasions when piling occurred, including details of the duration of the pre-piling search and soft-start procedures, and any occasions when piling activity was delayed or stopped due to presence of marine mammals
- Details of watches made for marine mammals, including details of any sightings, details of the PAM equipment and detections, and details of the piling activity during the watches
- Details of any Acoustic Deterrent Devices (ADDs) used, and any relevant observations on their efficacy
- Details of any problems encountered during the piling process including instances of non-compliance with the agreed piling protocol
- Any recommendations for amendment of the protocol

Section 4 - Variation of standard piling protocol

The above protocol is considered to represent current best practice for a typical windfarm piling operation. Developers may, however, feel that the protocol is unduly restrictive, particularly in respect of restrictions on night-time/low visibility piling. In such cases, the burden of proof lies with the developer to demonstrate that effective mitigation can be delivered using an amended protocol.

A distinction should be made here between piling which commences during times of good visibility (and subject to the above provisions) and continues into a period of poor visibility/ night-time, and piling that commences during times of poor visibility (including night-time conditions).
Assuming that the operations are continuous the first scenario would not need additional mitigation. The second, scenario would, however, require enhanced

mitigation measures. For example, a developer wishing to commence piling at night might need to demonstrate that:

- Such piling is essential for commercial viability.
- The developer will provide enhanced detection of marine mammals (e.g. increased number of PAM systems and PAM operatives for commencement of piling during night-time.

Each request for variations from the protocol should be considered on its merits and, to ensure consistency across projects and other marine industries, in close liaison with JNCC and other statutory nature conservation agencies.

Section 5 - Securing of mitigation package through legally-binding consent conditions and Environmental Management Plan (EMP)

Under current arrangements the mitigation package relating to windfarm developments is likely to be secured under FEPA conditions, rather than under the Electricity Act s.36 consent. Conditions drafting is likely to vary according to project specific issues and will evolve as our understanding of the issues improves. Conditions imposed by the MMO (formerly MFA, formerly MCEU Defra) in respect of the Thames windfarms are set out below as an example of possible consent requirements only.

9.20 Conditions 9.20 to 9.22 shall only apply where driven or drilled pile foundations are to be installed.

9.21 Construction activities shall not commence until the Licence Holder has agreed with the Licensing Authority and [insert relevant nature conservation agency name] a scheme for the mitigation of potential impacts on marine mammals. The scheme must be submitted to the Licensing Authority by the date specified in the timetable required under condition 9.35. Such a scheme shall include, inter alia:

- *A requirement on the Licence Holder to ensure that suitably qualified and experienced Marine Mammal Observers are appointed and [insert relevant nature conservation agency name(s)] notified of their identity and credentials before any construction work commences.*

- *A requirement on the Licence holder must ensure that piling activities do not commence until half an hour has elapsed during which marine mammals have not been detected in or around the site. The monitoring should be undertaken both visually (by Marine Mammal Observers) and acoustically appropriate passive acoustic monitoring equipment. Both the observers and equipment must be deployed at a reasonable time before piling is due to commence.*

- *A requirement on the Licence Holder to ensure that at times of poor visibility (night-time, foggy conditions, sea state greater than that associated with force*

4 winds, etc.) enhanced acoustic monitoring[11] of the zone is carried out prior to commencement of relevant construction activity.

- *A requirement that piling may only commence using an agreed soft start procedure. The duration and nature of this procedure must be discussed and agreed prior to commencement of operations[12].*
- *A requirement that the Licence Holder must make provision for a reporting methodology to be in place before works commence to enable efficient communication between the MMOs and the skipper of the piling vessel.*

9.22 Piling activities shall not take place other than in accordance with the scheme agreed at 9.21 above

In addition to be involved in the drafting of such conditions, it is likely that statutory nature conservation agencies will want to check that a project's Environmental Management Plan contains appropriate protocols relating to the pile driving operations, such as how the MMOs will interact with the piling crew. Drafting of a potential template condition requiring approval of the EMP following consultation with the agencies is set out below:

X: The Licence Holder must submit a copy of a project Environmental Management Plan for the approval of the Licensing Authority, in consultation with CEFAS, and the [insert relevant nature conservation agency name(s)], at least 4 months prior to the proposed commencement of construction works. To ensure that satisfactory arrangements are in place for liaison on environmental issues. Construction shall not commence until such time as the Environmental Management Plan has been approved by the Licensing Authority.

Y: The Licence Holder must ensure that a suitably qualified and experienced liaison officer, Marine Mammals Observer(s) and other officers are appointed (for fisheries and environmental liaison) and that the Licensing Authority is notified of their identity and credentials before any construction work commences, to establish and maintain effective communications between the Licence Holder, contractors, fishermen, conservation groups and other users of the sea during the course of the project.

Z: The Licence Holder must ensure that the liaison officer's environmental remit includes:

i) Monitoring compliance with the commitments made in the Environmental Statement and the Environmental Management Plan (as agreed under condition Y above).

[11] The details of any enhanced acoustic monitoring scheme would need to be agreed in advance with the regulator as advised by the relevant nature conservation agency however they might include the provision of additional hydrophones and/or T-Pods together with extra PAM operators

[12] As discussed at footnote 9 above there is potential for "soft-start" levels to be of a sufficient volume to give rise to injury or significant disturbance. Information on possible noise levels will therefore need to be provided as part of the EIA and the process will need to be agreed with the regulator as advised by the relevant nature conservation agency. An excessive level for soft-start procedures might be that capable of giving rise to TTS to an individual in close proximity (metres) to the piling operation

ii) *Providing a central point of contact for the Monitoring Programme and Ornithological Monitoring Programmes required under relevant conditions*
iii) *Liaison with fishermen, conservation groups and other users of the sea concerning any amendments to the method statement and site environmental procedures.*
iv) *Inducting site personnel on site / works environmental policy and procedures.*

Section 6 - References

Collaborative Offshore Wind Research into the Environment (COWRIE):
http://www.offshorewindfarms.co.uk

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Appendix 4
Hawkins et al (2014)

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Article

Impact of Design Parameters on the Dynamic Response and Fatigue of Offshore Jacket Foundations

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Abstract: The lifetime of offshore foundations is governed by a combination of harsh environmental conditions and complex service loads. The fatigue limit state (FLS) analysis needs to be performed in the time domain to capture the complex phenomenon. This study aims to investigate different parameters and design modifications that can impact the design life of an offshore jacket foundation. An OC4 jacket foundation is designed in industrial software from DNV and reduced to a super-element model. The super-element model is connected to an NREL 5-MW wind turbine designed in Bladed. The time-series loads are used to compute the fatigue damages faced by the foundation during the service life. The impact of soil non-linearity, marine growth, scour size, the mass of the transition piece, and the grouted connection's design on the dynamic response and fatigue damages are compared. A 30% increase in life was observed by replacing the concrete transition piece with a lightweight steel configuration. The fatigue damages were considerably greater for the inclined pile in the leg grouted connection than for the leg in the pile concept. The study provides a different perspective by analysing the effect of design parameters and design changes in the complex and computationally expensive time-series domain.

Keywords: wind turbine; jacket; offshore; fatigue; Bladed; FLS; transition piece; grouted connection; OC4

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1. Introduction

The International Renewable Energy Agency (IRENA) claims that wind power will provide more than 33% of global electricity demand by 2050 [1]. Many countries are establishing very large offshore wind farms in a quest to meet their clean energy targets. The total installed wind energy capacity in Europe from Offshore Wind Turbines (OWT) has increased from 84 GW in 2010 to 189 GW in 2018 [2]. In order to speed up the adoption and reduce the cost, there is a need to constantly improve the design of OWT foundations.

An OWT faces a combination of complex loads throughout life, and fatigue life is the main performance criterion of OWT foundations [3]. The complexity and computationally expensive nature of time-series fatigue analysis force the researchers to make simplified assumptions, which impacts the accuracy of modern-day research. A complete wind resource analysis was done in [4] to describe the method of reference site selection. The study also highlighted the method of correlating short-term data with multi-year historical data to extract the environmental data for any research. The environmental data, including the wind and wave resource information, is needed to perform any time-series fatigue simulation. The author discusses the preliminary design of monopile foundations to support larger wind turbines and deeper water in [5]. A time-series wind field was generated in the TurbSim, but the study only focused on DLC (Design Load Case) 1.2 and ignored conditions above cut-off wind speed and wave currents.

The soil-structure interaction is a key player in offshore foundation modelling and is discussed in [6]. The industry standard definition of pile-soil interaction is inaccurate

for offshore foundations with a large diameter (monopile). The effect on the fatigue life of monopile foundations was studied using four soil foundation models in [7], which resulted in the variation of fatigue damage up to 22% based on different soil models. The PISA project proposed a different soil-pile definition method based on field testing and numerical results [8]. However, the method only shows good accuracy at the testing site and can not be used on other or multi-layered soils. A detailed FEA analysis was performed in [9] based on five constraints (fatigue, stress, vibration, buckling, and deformation). It was observed that fatigue performance is the primary design driver of the jacket foundations. Abdulhakim et al. studied the structural reliability of the jacket subjected to corrosion fatigue [10]. The spectral fatigue analysis method was used on an eight-legged oil and gas jacket foundation and showed that 73 joints had a service life of fewer than 20 years [11]. The research was performed to study the effect of design parameters and foundation types (fixed base, monopile, and caisson) on the dynamic response and fatigue in [12]. However, the fatigue analysis was performed in a MATLAB-based tool (MLife) and did not include the time series aspect. A study was performed to analyse modelling parameters' effect on the jacket foundation's dynamic response [13], but the effect on fatigue life was not considered. The author also compared the dynamic response of monopile, jacket, and tripod foundation in [14] without including the complex time-series fatigue phenomenon. The structural redundancy's effect on fatigue life and life extension was studied in [15]. The author proposes using the fracture mechanics approach along with the fatigue analysis in the future. Thanh-Tuan et al. presented a cost-effective three-legged jacket by studying various bracing patterns. The dynamic response was significantly changed with the change in the bracing pattern [16]. The dynamic responses of monopile and jacket foundations were compared in [17]. It was observed that the jacket foundation had a better dynamic response, and the monopile foundation was not suitable for the Korean offshore wind farm.

An integrated or super-element design approach can be used for time-series fatigue analysis. A previous study compared integrated and super-element approaches in [18] and found similar fatigue damages. The same set of software was used to perform fatigue analysis of a 10-MW wind turbine using an integrated design approach in [19]. It was observed that integrated or super-element approaches could be used alternatively. When combined with hydro-servo-elastic software (e.g., Bladed), the computational time can be significantly reduced, resulting in improved fatigue analysis accuracy due to the interaction of the whole model. The most used OWT foundations are monopile and jacket foundations. Monopiles are primarily used for shallow water with depths up to 30 m. The jacket foundations, on the other hand, can be successfully used for water depths above 40 m. Moreover, jacket foundations can be used in multi-layered soil, but monopiles are mostly used in sand and gravel soils. The primary objective of this research is to establish the effect of various parameters on the jacket foundation's dynamic response and fatigue life. This study focuses on a super-element method, where an OC4 jacket foundation in a 50 m water depth, modelled in Sesam, is reduced to the super-element file. The super-element model provides information on the model's mass matrix, gravity vector, and stiffness matrix. The super-element model includes the values of these parameters at the interface point (intersection of tower and TP). The interface point is then shared with the Bladed software to compute the time series of forces and moments in three axes. The time-series of loads are imported in the Sesam Wind Manager (SWM) to generate a time-series of stress range, eventually used to determine fatigue damages. The process is repeated on similar environmental conditions for a set of parameters and design modifications to obtain their effect on the dynamic response and fatigue damages. This paper contributes to knowledge with a unique set of changes in the design, material of transition piece, and grouted connection, and observes their effect on the dynamic response and fatigue life. The study also includes comprehensive details of the complex design of FLS analysis using the super-element method.

The paper is organised as follows. Section 2 describes the reference model. Section 3 explains the model validation methodology. Section 4 explains the methodology used for FLS analysis. Section 5 discusses the results, and Section 6 concludes the study.

1.1. Sources of Loads

An offshore wind turbine faces a series of complex loads during its service life. The design standards DNV-OS-J101 [20] and IEC 61400-3 [21] suggest the list of loads to consider while performing analysis. The DNV-RP-C205 [22] standard was used to calculate each environmental load. The loads faced by an offshore wind turbine are usually classified into the following groups.

1.1.1. Inertia Loads

The loads are encountered due to the mass of Rotor Nacelle Assembly (RNA), Transition Piece (TP), tower, and foundation. These loads contribute most to the buckling and significantly affect the modal analysis. The structure can fail if an OWT encounters resonance due to the poor design, emphasising the need to consider these loads during the design process.

1.1.2. Wind Loads

The wind loads caused by the drag change with the height and the mean wind speed. The power-law profile is used to examine wind speed variation with height using Equation (1).

$$\overline{V}(z) = \overline{V}_r \left(\frac{z}{z_r} \right)^{\alpha} \tag{1}$$

where, $\overline{V}_r$ shows the wind speed at the hub height and α shows the roughness coefficient, usually 0.115 for offshore conditions. The wind loads as a function of height can be calculated by using Equation (2). Where $D(z)$ represents the tapered diameter of the tower and $C_{D,T}$ shows the drag coefficient of the tower at any height z.

$$F_{twr}(z) = \frac{1}{2} \rho_a C_{D,T} D(z) \, \overline{V}_r^2(z) \tag{2}$$

1.1.3. Rotor's Aerodynamic Loads

Due to airflow interaction, the combination of static and dynamic loads acting on the wind turbine rotor generates aerodynamic loads. The loads faced by the rotor are transferred to the top of the tower. The values of these loads for this study were obtained from [23] to perform the modal analysis.

1.1.4. Current Loads

Like the wind loads, the current loads are height and drag-dependent. Morison's equation describes the sub-surface current velocity by an exponential profile from MSL to the seabed. Where d is the water depth from MSL to the seabed and $V_{c,MSL}$ is the current velocity at MSL [24].

$$V_c(z) = V_{c,MSL} \left(\frac{d+z}{d} \right)^{1/7} \tag{3}$$

1.1.5. Hydrostatic Load

The offshore foundation is immersed in seawater, which results in hydrostatic pressure. The hydrostatic load (F_h) is a permanent normal load that increases with depth (h) and can be calculated by Equation (4), where g is the gravitational constant.

$$F_h = \rho_w g h \tag{4}$$

1.1.6. Wave Loads

Morison's equation is used because the wavelength, sea depth, shape, and size of an offshore jacket foundation are all governed by drag. The diameter D of the jacket's member must be smaller than one-fifth of the wavelength for Morison's equation to be employed. The current and wave loads can be computed for the structure submerged in the water by using Morison's equation [25]. Where C_m and C_d are inertia and drag coefficients, D is the member's diameter, U_x and a_x are velocity and acceleration induced by the current and wave.

$$F = F_d + F_m = \frac{1}{2}\rho_w C_d D|U_x|U_x + \rho_w C_m \frac{\pi D^2}{4} a_x \quad (5)$$

2. Reference Model

2.1. Site Specifications

The site-specific data used in this study is from the K-13 deep water site. The site is located in the North Sea and has a water depth of 50 m. The wind and wave climate definition is discussed in detail in Upwind Design Basis [26] and has been used by many studies due to the availability of data and validation purposes. According to the Pierson-Moskowitz wave spectrum, the wave conditions are characterised by the peak spectral period and significant wave height. Important site-specific data are summarised in Table 1. A peakedness factor of 1.0 was used for fatigue load cases, and a factor of 3.3 was used for all other cases, as advised in [26]. For simplicity, the effect of wind-wave directionality and turbulence intensity has not been considered.

Table 1. Site-specific data.

Parameter	Value
50-year significant wave height	9.4 m
50-year max wave height	17.48 m
50-year max wave period	10.87 s
Reference wind speed	42.73 m/s
Marine growth (−2 to −40 m)	100 mm
Marine growth density	1100 kg/m^3
Normal current at MSL	0.6 m/s
Extreme current at MSL	1.2 m/s

2.2. Wind Turbine Model

The study focuses on the NREL 5-MW baseline offshore wind turbine, described by Jonkman et al. in [27]. The wind turbine was developed for research and conceptual studies to assess the effect of offshore wind energy in deep and shallow water. The model was developed by combining publicly available data from the Repower 5M prototype, the Multibird M5000, and the projects like WindPACT, RECOFF, and DOWEC. The model has widely been used by many projects (Upwind Design Basis [26], IEA Wind Annex OC3 [28], and OC4 projects [29]) for code comparison and to standardise baseline offshore wind turbines.

The NREL 5-MW wind turbine is an upwind, three-bladed horizontal axis wind turbine. The hub height is 87.5 m. Moreover, the tower mass is centred along the tower centerline. The main dimensions and characteristics of the turbine are given in Table 2.

2.3. FEA Model

The FEA model of the jacket and soil was developed in the Genie (version 8.0-11) module of Sesam software, which has widely been used in the industry for research and development purposes. The analysis is performed on the developed model based on the site-specific conditions, such as wind, wave, and current loads. The steps involved in developing the model and the definition of the foundation model are discussed in the following sections.

Table 2. NREL 5-MW specifications [27].

Rotor		**Tower**	
Diameter	126 m	Height	87.6 m
Rotor orientation	Upwind	CM location	38.234 m
Hub height (OC4)	90.55 m	Diameter top	3.87 m
Rated rotor speed	12.1	Diameter bottom	6 m
Number of blades	3	Thickness top	0.019 m
Drivetrain		Thickness bottom	0.027 m
Generator rotational speed	1173.7 RPM	**Masses**	
Rated rotor speed	12.1	Tower	347,460 kg
Gearbox ratio	97:1	RNA	350,000 Kg
Operational data		Hub mass	56,780 kg
Cut-in speed	3 m/s	Blade mass	17,740 kg
Rated wind speed	11.4 m/s		
Cut-out wind speed	25 m/s		
Rated power	5 MW		

2.3.1. Jacket Support Structure Model

This study focuses on the jacket-type foundation, usually four-legged and connected with braces through welded joints. The wind turbine is attached to the jacket support structure used in phase 1 of the OC4 project. The material properties, node coordinates, and member properties are the same as in the study [4]. The four levels of X-braces are connected with the four-legged jacket, and piles have a penetration depth of 45 m. The jacket has a total height of 70.15 m, including the TP (transition piece), which is 4 m high. The main properties of the OC4 jacket support structure are given in Table 3. The model was developed in Genie based on the provided information. The colour-coded Jacket support structure showing different cross-sections is given in Figure 1.

Table 3. OC4 jacket support structure parameters.

Component	**Value**
Steel density	7850 kg/m^3
Young's modulus	2.1×10^{11} N/m^2
Poisson's ratio	0.3
Number of legs	4
Water depth	50 m
X and mud braces OD, thickness	0.8 m, 20 mm
Lowest level leg OD, thickness	1.2 m, 50 mm
2nd to 4th level legs OD, thickness	1.2 m, 35 mm
Leg connecting TP OD, thickness	1.2 m, 40 mm
Pile OD, thickness	2.082 m, 60 mm
Jacket height above the mudline (including TP.)	70.15 m

2.3.2. Grouted Connection

The base model in the OC4 project only considers the jacket above the mudline, and only the section of piles above the mudline is considered. This implies that all six degrees of movement are considered zero. The pile has a bigger diameter and is connected with the leg by filling grout material between the surfaces. The grout materials density is 2000 kg/m^3. The grout connection volume from mean sea level –45 to –49.5 m is considered rigid in the model due to very high stiffness (Figure 2). The grouted connection is shown in black colour in Figure 1.

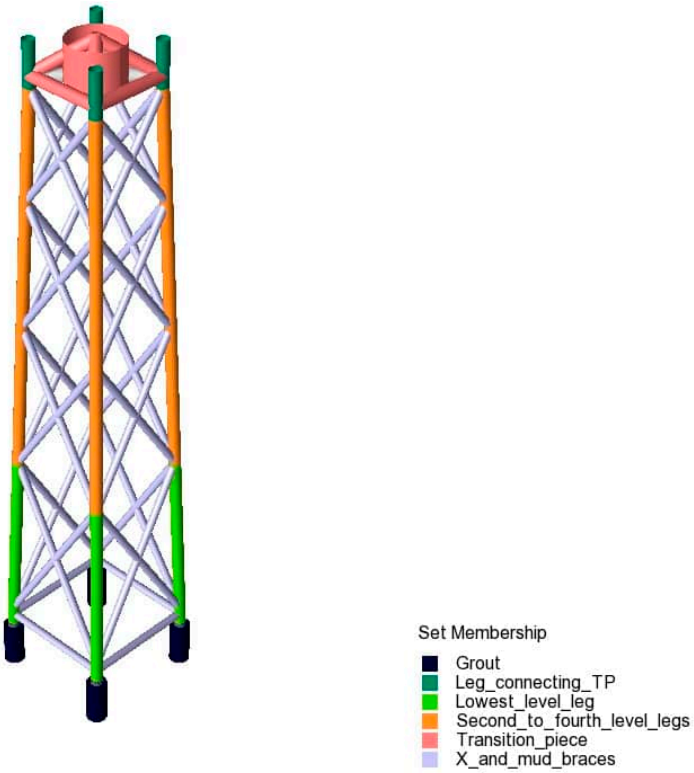


Figure 1. Model of the jacket foundation.

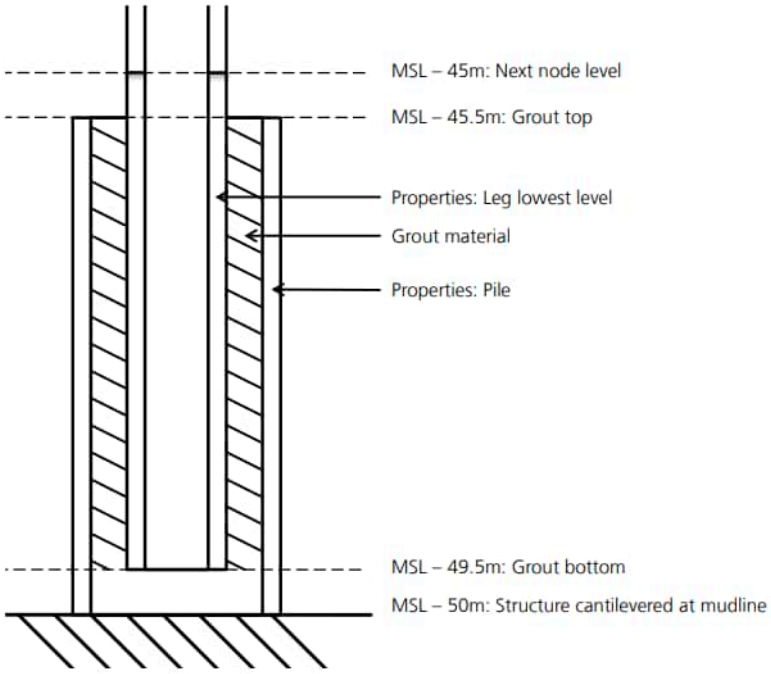


Figure 2. A grouted connection between pile and leg [29].

This rigid model was used to perform the linear analysis, while the non-linear analysis was performed by including the soil and pile model. This is explained further in the following sections.

2.3.3. Transition Piece

The OC4 model considers the TP a rigid concrete block with a mass of 666 t. However, Genie lacks the ability to model a concrete block. The TP was, therefore, modelled as a

beam with increased stiffness to simulate a similar effect (see Figure 1). Moreover, point mass was included to obtain a total mass of 666 t.

2.3.4. Soil-Structure Interaction Modelling

The laterally loaded piles are mostly modelled with a simplified method called Beam on Nonlinear Winkler Foundation (BNWF) or a p-y method. The method provides simplicity and saves computational costs over the 3D FEA model. The hypothesis is that the soil reaction (p) exerted by the soil at the pile is proportional to the pile displacement (y). This method is widely used in the offshore oil & gas industry to find pile deformations and stiffness and is given in API and DNV industry standards. Although this approach has been widely used for the oil & gas industry design, its accuracy is questionable for offshore foundations having a large diameter (such as monopile). The study by [7] has determined that the p-y method overestimates the displacement, stiffness, and bending moment more than the FE methods for monopile. However, this study uses the p-y method to model the soil because it is reasonably accurate for slender bodies (such as jacket foundations) and provides good computational efficiency. The importance of proper soil-structure interaction for jacket foundations is discussed in [30]

The analysis is performed in the K-13 deep-water site. The six-layered soil profile of the site given in Table 4 was modelled in the Genie. The complete model showing the tower, jacket, piles, and six-layered soil is shown in Figure 3.

Table 4. The soil profile of k-13 deep-water site [26].

	Unit Weight (N/m^3)	Friction Angle (°)	Young's Modulus (Mpa)
0–3	10,000	36	30
3–5	10,000	33	30
5–7	10,000	26	50
7–10	10,000	37	50
10–15	10,000	35	50
15–50	10,000	37.5	80

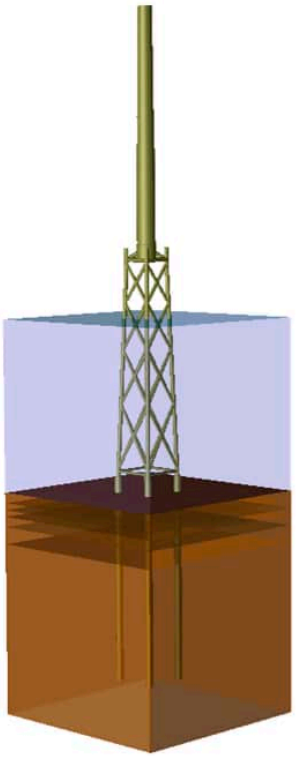


Figure 3. Complete 3D model.

3. Model Validation

3.1. Modal Analysis

The modes of vibration were determined for a fixed foundation and non-linear pile-soil model. It is crucial to design semi-rigid (fixed at the base with some mobility like a jacket foundation in soil) so that the first natural frequency does not approach the 1P and 3P regions to avoid resonance. Figure 4 shows that the system's natural frequency with the NREL 5-MW wind turbine should be between 0.22 and 0.35 Hz [31]. The modal frequencies of the model with fixed base and non-linear model with soil were computed and compared with the existing literature. The first four frequencies of the fixed foundation were compared with [32], and the frequencies for both non-linear pile-soil models were compared with [33]. The results are compared in Table 5, where the second side-to-side bending (−9.1%) depicts the maximum deviation. This confirms the validity of the model.

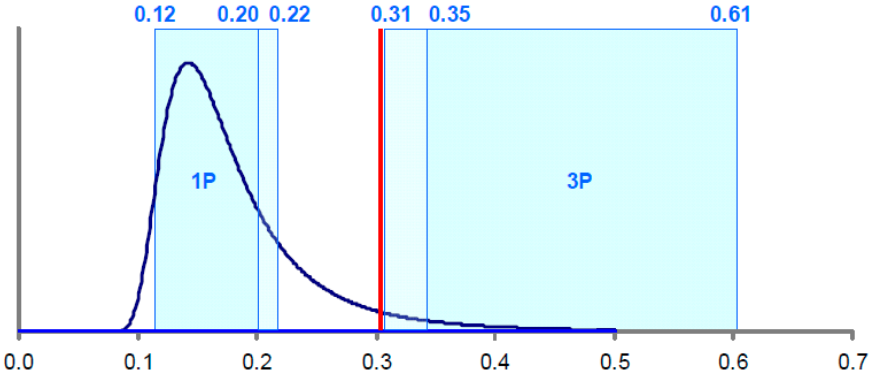


Figure 4. The power density of the NREL 5-MW wind turbine [26].

Table 5. Comparison of natural frequencies with the reference values.

Models	Natural Frequencies (Hz)			
	1st Fore-Aft	1st Side-to-Side	2nd Fore-Aft	2nd Side-to-Side
Fixed base [This study]	0.3169	0.3169	1.1799	1.1799
Fixed base [32]	0.3189	0.3189	1.1936	1.1936
Non-linear soil [This study]	0.2935	0.2935	0.935	0.937
Non-linear soil [33]	0.2772	0.2795	0.8931	1.023

3.2. Static Analysis

The deflection behaviour of the structure was assessed with static analysis and compared with the results given in [32]. The maximum displacement at the RNA was observed for comparison under the loaded conditions. Table 6 shows a good agreement with the literature, with a minor difference of −0.36%, further validating the model.

Table 6. Static deformation of the baseline wind turbine model.

Load Case RNA Mass/Thrust	Displacement at RNA		
	Present	Ref. [32]	% Difference
350 Tonne/2 MN	1.2045 m	1.2089	−0.36%

The contour plot of the deformation of the whole model and the graph of tower deflection along its length, with a fixed foundation, is shown in Figure 5.

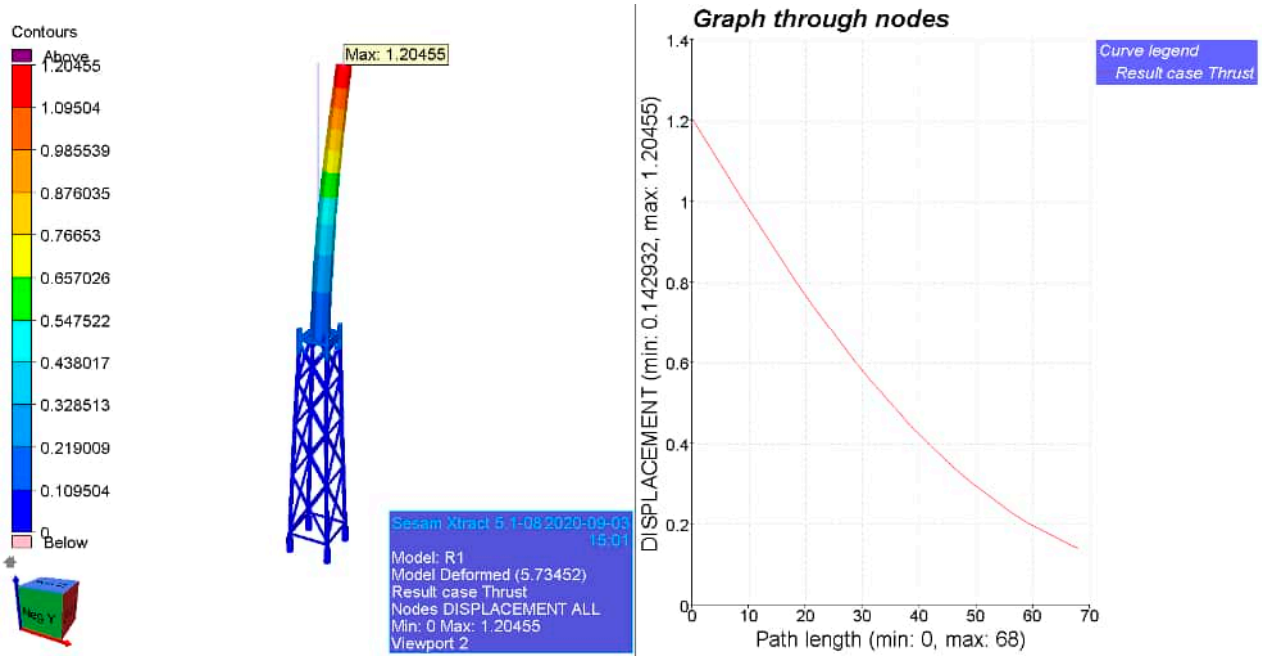


Figure 5. Deflection with a fixed base.

4. Fatigue Limit State (FLS) Analysis

The fatigue design of OWT support structures is controlled by the dynamic response to combined aerodynamic and hydrodynamic loads [34]. The S-N curve and fracture mechanics approaches are the two most often used fatigue assessment techniques. As advocated by the standards [35,36], the S-N curve method is the focus of this research. The S-N curve, which is based on experimental data and is a plot of Stress S against the number of cycles N, is used to calculate the fatigue failure of an object. The experiments are repeated for many similar specimens under stress to obtain the design S-N curve. The stress range at a point is related to the number of cycles to failures with the help of Equation (6). Where N is the number of cycles to failure, m is the negative inverse slope of the S-N curve, σ is the stress, and C is the intercept of the S-N curve with the log of the number of cycles N. This analysis involves estimating stress concentration factors (SCFs) for tubular joints based on geometry and butt welds. The fatigue life is based on the rainflow counting of stress time histories [37].

$$log_{10}(N) = C - mlog_{10}\Delta\sigma \quad (6)$$

4.1. Methodological Approach for FLS

The FLS analysis is performed based on the super-element approach, which is discussed later. The FLS load calculation is based on the Design Load Cases (DLCs) recommended by [36]. FLS analyses are typically performed for DLC 1.2, DLC 6.4, and DLC 7.2. This study focuses on the DLCs given in Table 7, and DLC 7.2 (idling after fault) is omitted because most of the fatigue life is based on these DLCs only. Moreover, a reduced form of scatter diagram in the North-sea (in Table 8) is used to obtain the result due to the increased number of simulations to observe the effect of different parameters on the time-series fatigue life.

Table 7. Design load cases.

Design Load Case	Description	Type
DLC 1.2	Power production	FLS
DLC 6.4	Idling	FLS

Table 8. Scatter diagram.

Wind Speed (m/s)	Wave Height (m)	Period (s)	Occurrences/yr (h)	DLC
4	1.11	4.15	4365	DLC 1.2
14	1.90	4.30	2185	DLC 1.2
24	3.42	5.51	545	DLC 1.2
2	1.08	4.25	1260	DLC 6.4
30	4.46	6.25	410	DLC 6.4

The validated foundation model in Section 4.1 was exported to the SWM, where the Wajac input file defined the hydrodynamic properties, and Sestra defined the type of analysis. The super-element files were generated based on the input data.

4.1.1. Super-Element Design Method

Sesam offers time-series FLS analysis in integrated and super-element approaches. The entire structure (including the tower) is modelled in Genie and exported to Bladed (version 4.12) to generate time-series loads in an integrated design approach. The study [38] uses an integrated design approach on a 10-MW offshore wind turbine. However, in the super-element approach, only the jacket and the wave loads are exported to Bladed in the form of a super-element.

The super-element method is implemented in this research because it is extensively used in the industry due to the lack of a requirement to share the jacket design and the ability to export complex designs [39]. The super-element model should behave similarly to the integrated model. DNV has published verification studies showing the accuracy of the super-element method in [40]. Moreover, integrated and super-element approaches are compared in [18]. Figure 6 shows the schematic of the super-element method.

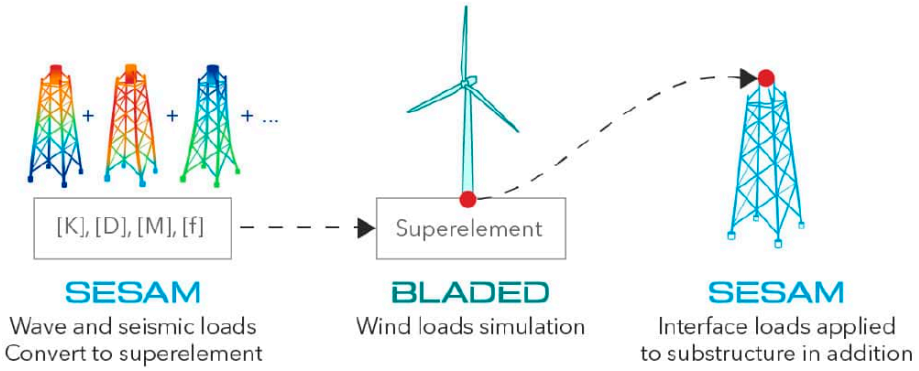


Figure 6. Super-element method [39].

The super-element files contain the model's mass matrix, gravity vector, and stiffness matrix information. The damping matrix was generated based on the Rayleigh coefficients, stiffness, and mass matrices. The original model was verified with the literature, as discussed in Section 3. However, the super-element data must also be converged (spectral and spatial) to replace the original model.

Spectral Convergence

The boundary node is at the interface point and contains only six degrees of freedom (DOFs) which is not enough. The number of DOFs is increased until there is an agreement between the dynamic response of the original model and the super-element model. The number of modes was selected after the dynamic response converged and was similar to the modal shapes based on the standalone jacket model in Genie. Hence, 40 additional DOFs were added to the super-element model to capture actual dynamic responses based on the original model. The verification report suggests that using 40 or more modes may reduce the difference between the two models to a maximum of 0.5%. Genie is used to obtain the eigenvalue frequencies of the jacket (excluding RNA and tower), and SWM obtains the

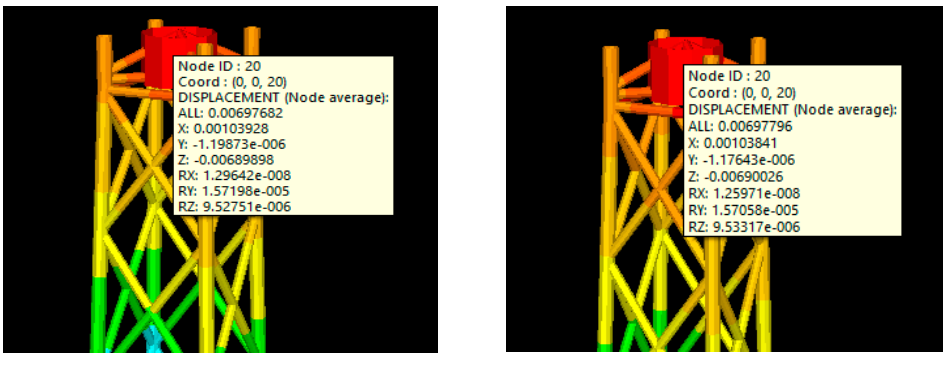
super-element model's frequencies. The model's modal frequencies are compared for the first 20 modes in Table 9 and show a maximum difference of only 0.16%. It shows that both models can be used interchangeably to produce similar responses.

Table 9. Comparison of modal frequencies of the original and super-element models.

Model Number	Original Model Freq. (Hz)	Super-Element Model Freq. (Hz)	Difference (%)
1	1.0885	1.0887	−0.01837
2	1.0885	1.0887	−0.01837
3	5.0687	5.07	−0.02565
4	6.1037	6.106	−0.03768
5	6.1038	6.106	−0.03604
6	6.7875	6.8139	−0.38895
7	7.4895	7.4896	−0.00134
8	9.0797	9.0791	0.006608
9	9.4819	9.4845	−0.02742
10	9.4821	9.4847	−0.02742
11	9.7622	9.7631	−0.00922
12	11.125	11.126	−0.00899
13	11.816	11.835	−0.1608
14	12.681	12.684	−0.02366
15	12.695	12.7	−0.03939
16	13.05	13.06	−0.07663
17	13.215	13.223	−0.06054
18	13.216	13.223	−0.05297
19	14.121	14.122	−0.00708
20	14.375	14.377	−0.01391

Spatial Convergence

In order to perform the super-element analysis, the super-element model should also show spatial convergence, i.e., show similar behaviour under the same loading condition. A simulation is performed in SWM on the original model under a specific load, and displacement at the interface point is noted. Moreover, another simulation is performed on a super-element model to observe the displacement at the interface node under the same loading conditions. The results are compared in the Xtract module at t = 25 s and show good accuracy, as shown in Figure 7.



(a) (b)

Figure 7. Comparison of nodal displacements for spatial convergence. (**a**) Displacements at the interface node of the original model. (**b**) Displacements at the interface node of the super-element model.

4.1.2. Bladed

An aero-hydroservo-elastic solver like Bladed is needed to simulate the coupled dynamic response of an offshore wind turbine. This complex simulation captures the interaction of a multi-physics system and simulates a holistic model in a coupled manner [41]. For defining the wind loads, each wind speed is simulated for a period of 200 s. The

turbulence can be modelled in the software to include temporal and spatial variations. The wind loads in this study are simulated by ignoring any variations in the wind because of the computational cost. Turbine wake is not modelled in such simulations because only one wind turbine is being simulated. Although the super-element approach excludes hydro-servo interaction, the verification report [40] shows similar results by integrated and super-element approaches [42]. This super-element model was exported, where it was attached at the interface point to the NREL 5-MW wind turbine. NREL 5-MW wind turbine was fully defined in Bladed, including blade geometry, airfoil sections, rotor, hub, nacelle, and tower.

The Bladed software can generate simple time-series loads with the built-in controller. However, the fatigue damages were relatively high because of the complex nature of FLS analysis. The light and dark blue lines (Figure 8) show demanded generator speed and torque and are constant initially. However, the measured generator speed (orange) fluctuated around the demanded generator speed later in the simulation. The controller tries to correct this by pitching the blades (the green line fluctuates between 0 and 20°), but it over-corrects and exacerbates the oscillation in generator speed. An external controller for the NREL 5-MW wind turbine was implemented to improve the accuracy of fatigue results. Figure 9 shows the stabilised blade pitch angle for a demanded generator torque. It shows the need to design and implement an external controller to improve the accuracy of complex FLS simulations. It was also observed that the blade pitch angle increases at higher wind speeds but remains constant at a given wind speed.

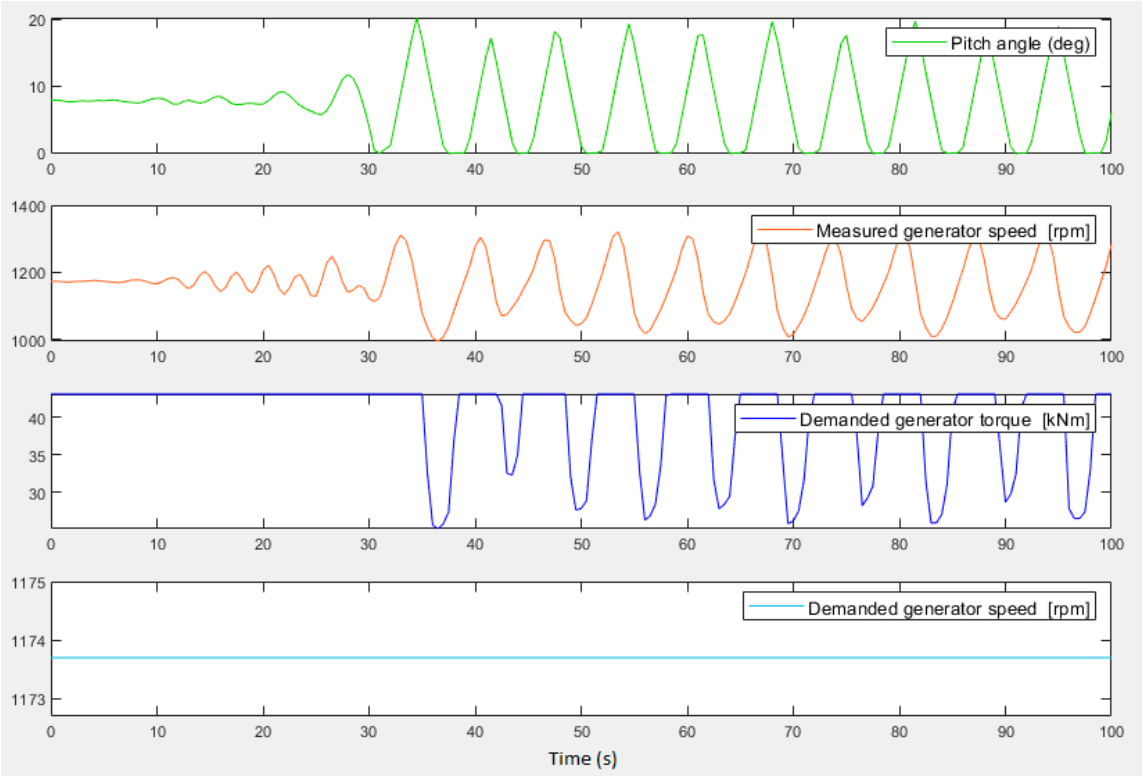


Figure 8. Error in blade's pitch angle with a built-in controller.

4.1.3. FLS Simulation

The time-series load data from Bladed was then exported to SWM again to generate time-series stress. There are several methods to model the wave loads, as described in [43,44]. However, the structures having strong dynamic responses, like OWTs, require stochastic modelling of the sea states and their kinematics [45]. The significant wave height and mean crossing period define the wave energy spectra characteristics for OWTs [19]. The wave energy spectra for this study are given in Table 8. The stress concentration

factors (SCF) were calculated based on the Efthymiou principle on each tubular joint. The calculation of SCFs considers the joint's geometry and the nature of applied loads. The software uses the method to calculate SCF as given in the standard DNVGL-RP-C203 [44]. Based on the SCFs and the time series of loads, stresses on the joints are calculated based on the hotspot stress approach. Figure 10 shows the location of hotspots on the brace. The highest value of the eight locations on the circumference for each simulation was selected for the calculations [38]. Miner's rule was used to calculate the total damage at each joint after obtaining the time series of stress ranges. The calculation of damages is based on a user-selected S-N curve. Figure 11 shows the flowchart of modules used to generate fatigue time-series results.

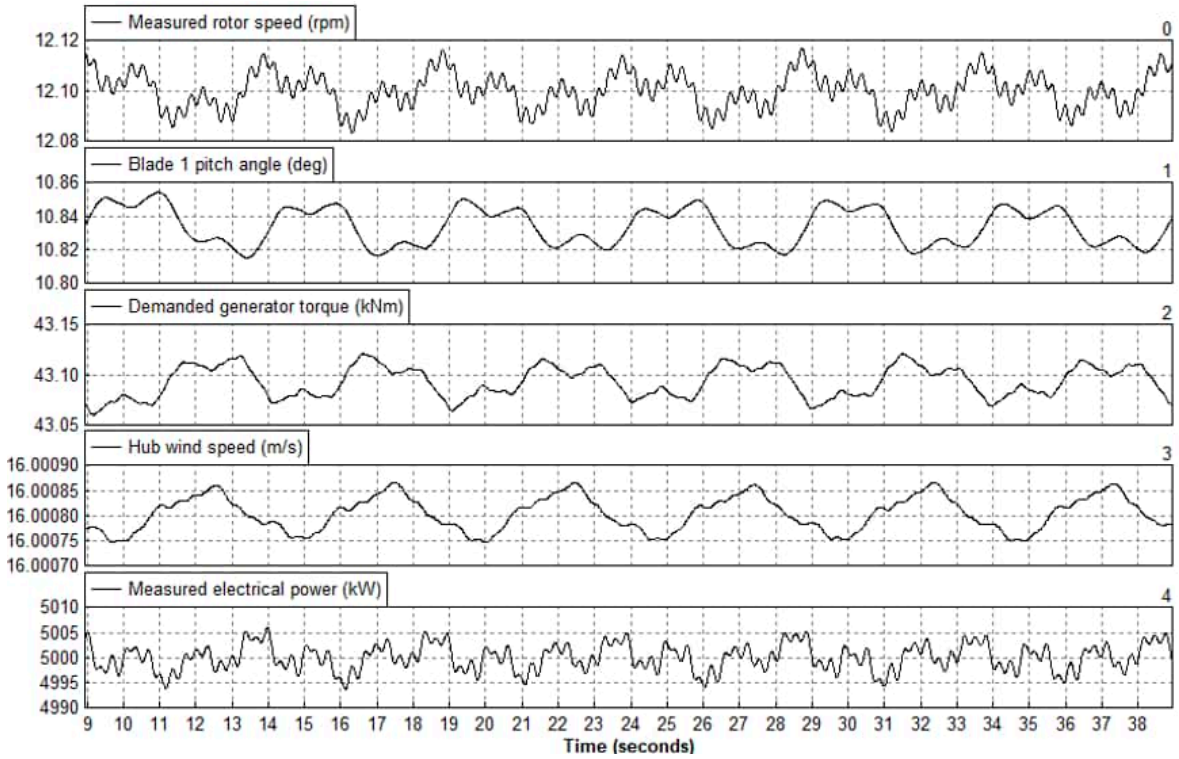


Figure 9. Uniform blade pitch angle with the designed controller.

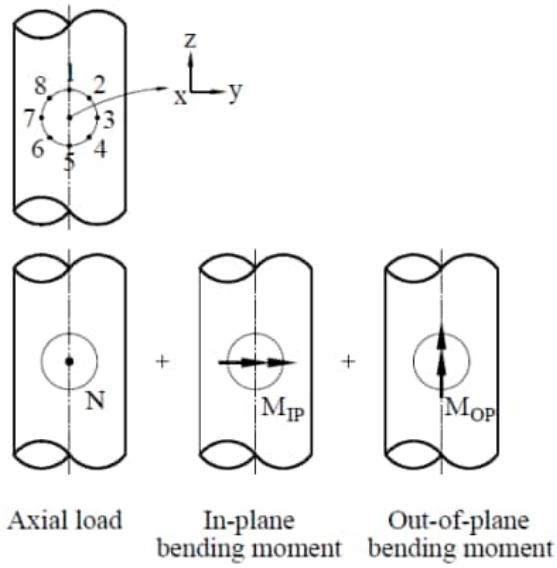


Figure 10. Hotspots of K-joint [44].

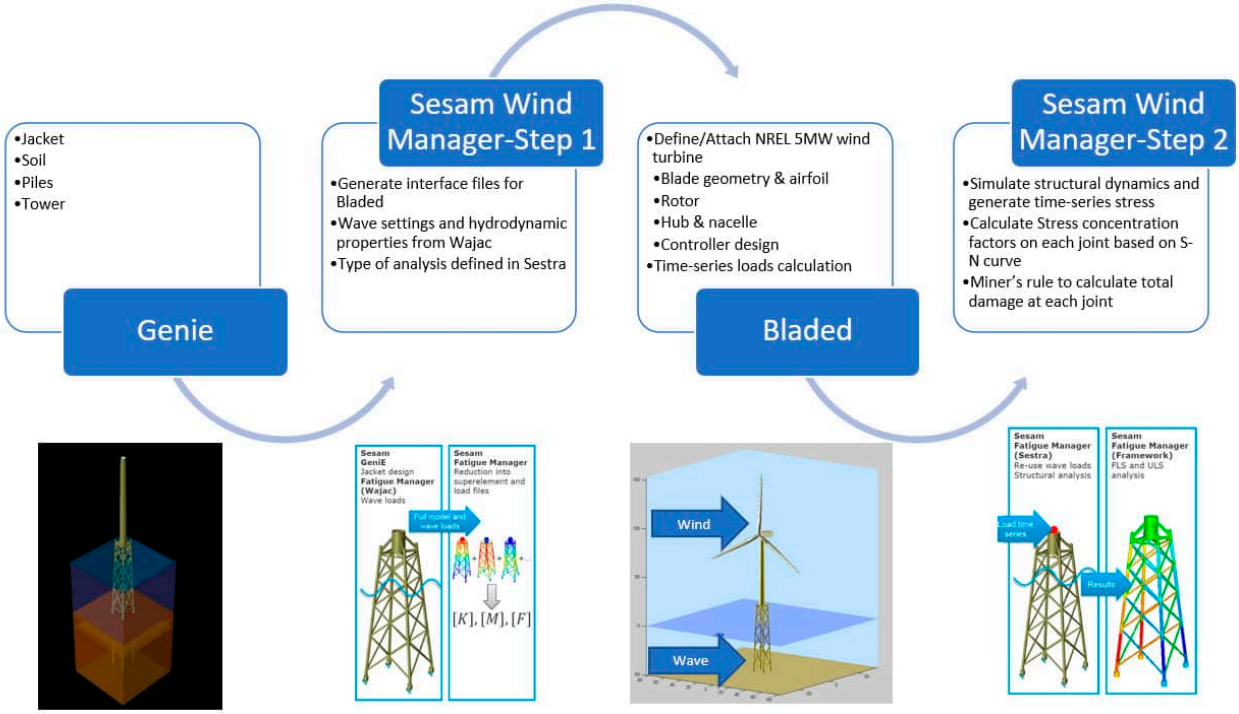


Figure 11. Flowchart of software modules.

5. Results and Discussion

The modelling parameters significantly affect the dynamic behaviour of the jacket, which also affects the fatigue life. Optimising the stiffness-to-mass ratio by varying design parameters to reach the perfect design is a typical feature of effective structural design. It is crucial to identify the parameters affecting the dynamic behaviour of the model. The effect of modelling parameters like marine growth, flooding, soil profile, the mass TP, the material of TP, scour development, and the length of grouted connection on the dynamic response was studied and discussed below.

The effect of these design parameters was also studied on the fatigue life of the jacket foundation. For this purpose, the fatigue life was compared for all the joints. Since the jacket design has much redundancy, the fatigue life of the second worst-performing joint has been considered a failure. The location of the worst-performing joint is on the x-brace, as shown in Figure 12. The fatigue damage value of 1 represents when the jacket's crack initiates, which leads to failure. Moreover, the effect of different grouted connection configurations on the time-series fatigue life of the jacket has also been studied.

5.1. Soil

The Original OC4 jacket foundation is linear and clamped at the base without any soil. The soil profile of the site selected in the North-sea was modelled in Genie and compared with the first four natural frequencies of the original model. It can be observed that the natural frequency of all the modes is lower than that of the original model (Table 5). This phenomenon is because soil stiffness is lower, and the structural behaviour is more flexible; hence, the eigenvalue frequencies will be lower. The trend agrees with the findings of the study [46]. Figure 13 shows the dynamic response and Figure 14 shows the damage of soil and non-soil models respectively. The damage is greater when the soil non-linearity is included in the model because of the lower stiffness and higher amplitude vibrations.

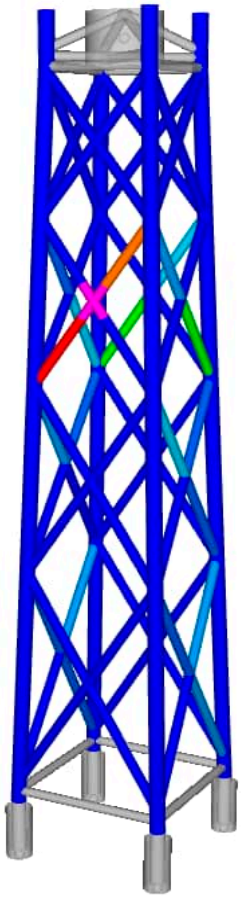


Figure 12. Location of the worst-performing joint.

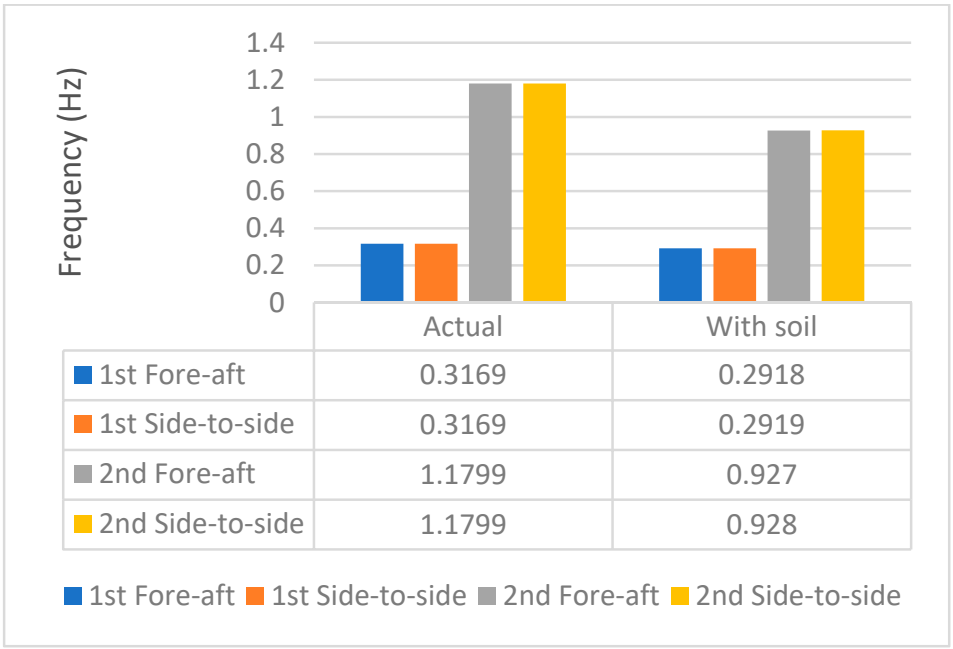


Figure 13. Dynamic response with and without soil.

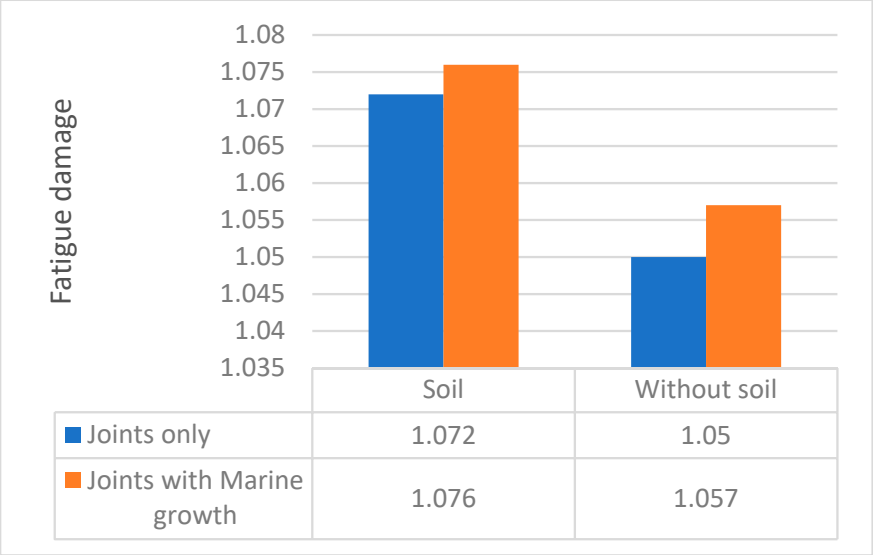


Figure 14. Fatigue damage showing the effect of soil and marine growth.

5.2. Marine Growth

Various marine growth mechanisms develop in the submerged jacket members, affecting the structural response because of the added structural area and the change in surface roughness. The marine growth was introduced in the model from the water depth of 2 to 40 m, with an increased density of 1100 kg/m^3 and thickness of 100 mm as per the guidelines of the DNV standard. It is observed that adding the marine growth has not changed the stiffness (Figure 15), and the effect on fatigue life (Figure 14) is not significant either. The fatigue damage may be slightly greater because of the increased SCF.

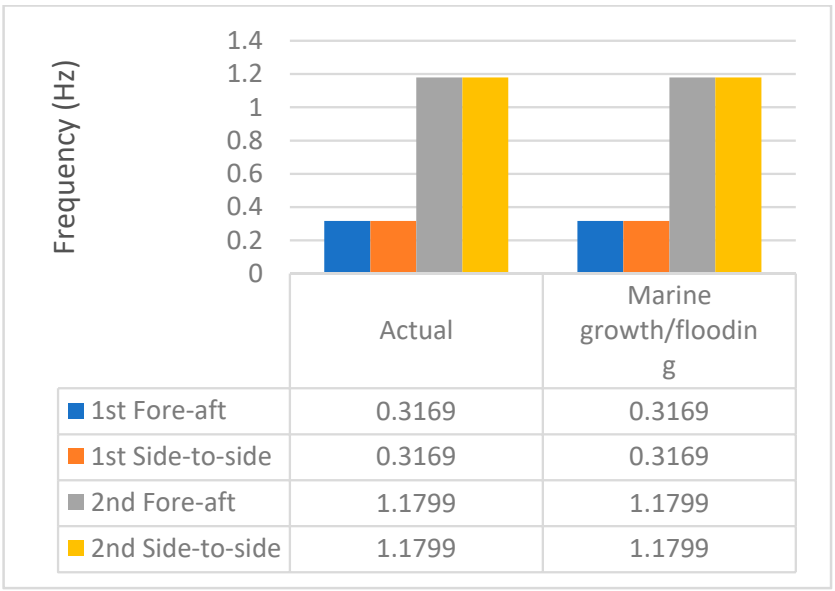


Figure 15. Dynamic response with/without marine growth.

5.3. Transition Piece

A TP connects the jacket foundation with the tower, and its design significantly affects the dynamic response and fatigue life. Two primarily used configurations are a stiff concrete block and a light frame design. The OC4 jacket foundation has a concrete TP, but Genie can not model a concrete block. The TP was modelled as a beam with increased stiffness and an added mass of 628,107 kg to simulate a similar effect. Moreover, the impact of TP on

the dynamic response and fatigue is studied based on three configurations. The medium configuration has a mass of 314,203 kg, and No TP configuration excludes the point mass. An additional configuration was also studied by including Steel TP (actual stiffness), and its effect on fatigue life is discussed below.

The first and second natural frequencies are close to the 1P and 3P rotor frequencies and are not impacted much by the change in mass (Figure 16). This trend follows the findings given in [47]. However, the effect is significant on the third and fourth natural frequencies.

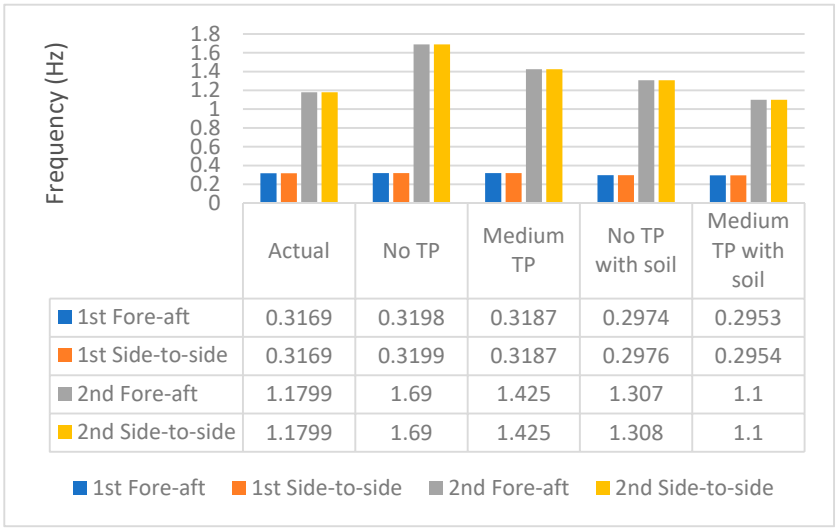


Figure 16. Effect of transition piece on the dynamic response.

The FLS check shows that the higher mass increases the axial force and moments on the joints, hence increasing fatigue damage (Figure 17). It is also observed that the fatigue damage decreases significantly when the whole TP is made of steel. The damage is lower due to the lighter TP and the absence of irregular material change in TP, which reduces the stress on joints.

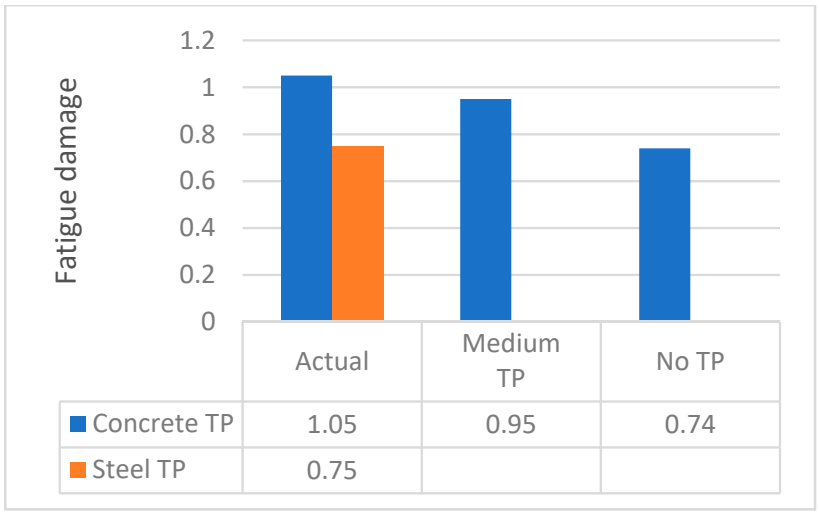


Figure 17. Effect of transition piece on the fatigue damage.

5.4. Scour

Seabed scour occurs near the intersection of piles with the soil. Scour is governed by structural geometry, fluid flow, and seabed conditions. The study assumes that the scour has already formed and does not investigate the phenomena of scour formation because it is outside the scope of this study. Three different configurations of scour are considered, which affect the values of spring stiffness showing the soil model.

Scour can affect the structural integrity because the embedded area of the jacket is lower, which results in lower support. This phenomenon results in lower stiffness and eigenvalue frequencies. Figure 18 shows that the effect is insignificant on the first fore-aft and side-to-side frequencies. However, there is a reduction in third and fourth eigenvalue frequency. There is a reduction of 0.70, 1.32, and 3.20% for 0.5, m, and 2 m of scour, respectively.

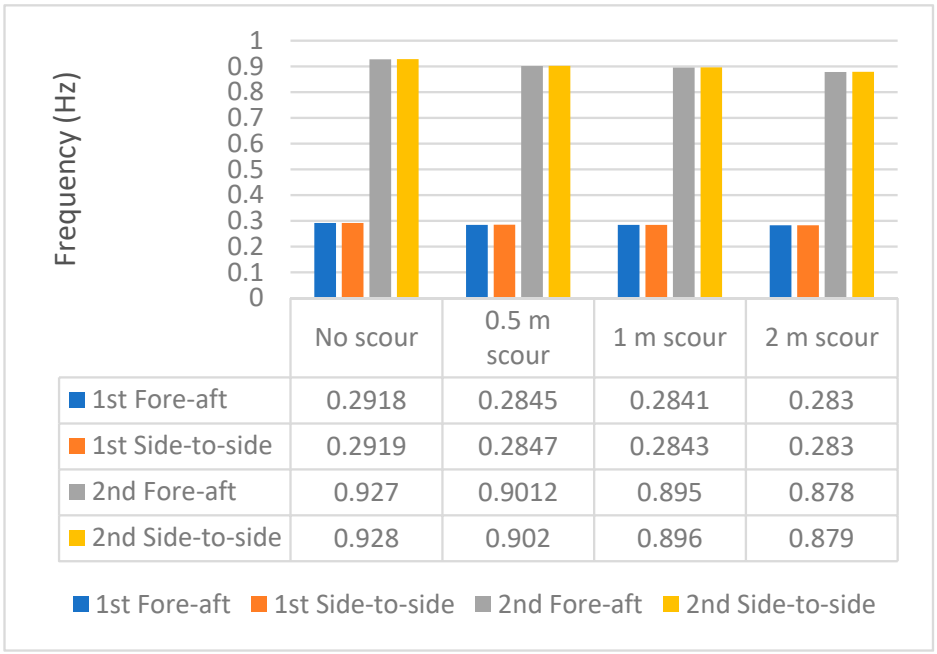
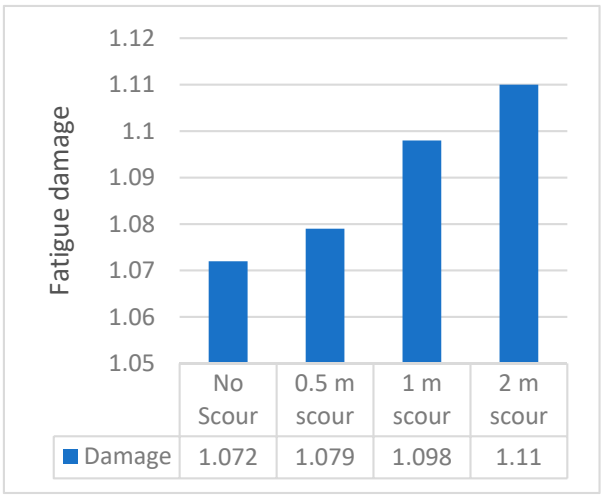


Figure 18. Effect of scour size on the dynamic response.

As expected, the lower support produces greater damage to the structure. The damage increases with the scour size (Figure 19) as it increases the stress range. It is worth noting that the increase in the damage with the scour size is not steep. Few soil types (low cohesion) can produce significant damage if the scour phenomenon is not mitigated. This asks for the need to perform frequent scour prevention and mitigation measures [47].



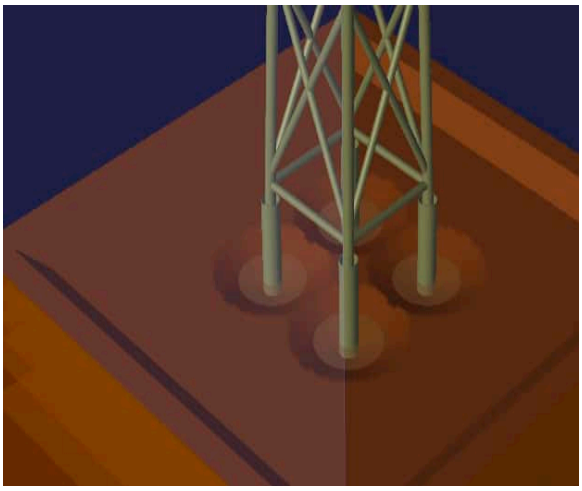


Figure 19. Effect of Scour on fatigue damage.

5.5. Grouted Connection

The OC4 jacket foundation is cantilevered at the mudline with a grouted connection. The grouted connection consists of the pile, jacket leg, and the two tubular members, and

these are connected with a grout material (density = 2000 kg/m^3) filled at each joint. The DNV practice recommends two concepts for the grouted connection design, i.e., inclined pile in leg and leg in a pile (see Figure 20). The inclined leg in the pile model has a pile diameter less than the leg, while the diameter of the pile is greater than the leg in the leg in a pile model.

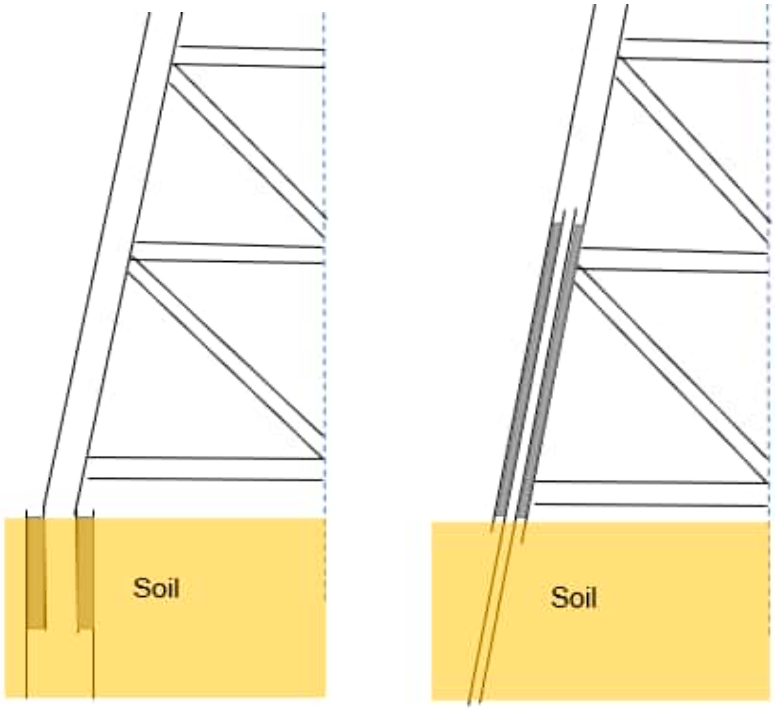


Figure 20. Types of grouted connections. (**a**) Pile in leg. (**b**) Leg in pile.

The original design of the OC4 foundation has a leg in a pile configuration, and the length of the grouted connection is 4 m. Two modified configurations of grouted connections were simulated. In one model, the length of grouted connection was increased to 6 m in the leg in a pile configuration, such that the hub height increased from 88.15 m to 90.15 m. The pile diameter was kept the same as in the original model (2.082 m). The second model has an inclined pile in leg configuration with a pile diameter of 0.9 m. The first two eigenvalue frequencies were not altered much in the leg in a pile model, but there was a decrease of 2.16% in the third and fourth natural frequencies (Figure 21). However, there was a significant decrease in the eigenvalue frequencies in the inclined pile in a leg model. The first two natural frequencies were inside the 1P rotor frequency range, which is a soft structure, as discussed in [48] and [49].

The fatigue damage has considerably reduced for the leg in a pile configuration with an increased grouted connection size (Figure 22), which is expected because it has greater support at the bottom. However, the damage is considerably greater for the inclined pile in a leg configuration because the 1P frequency is closer to the natural frequency of the rotor. Moreover, the structure is also not stiff enough to provide good support. Another interesting observation was that the highest damage point was on an x-brace around the middle of the jacket, which has moved to the braces at the bottom of the jacket. Additionally, the damage at the previous point of reference has slightly increased to 1.08.

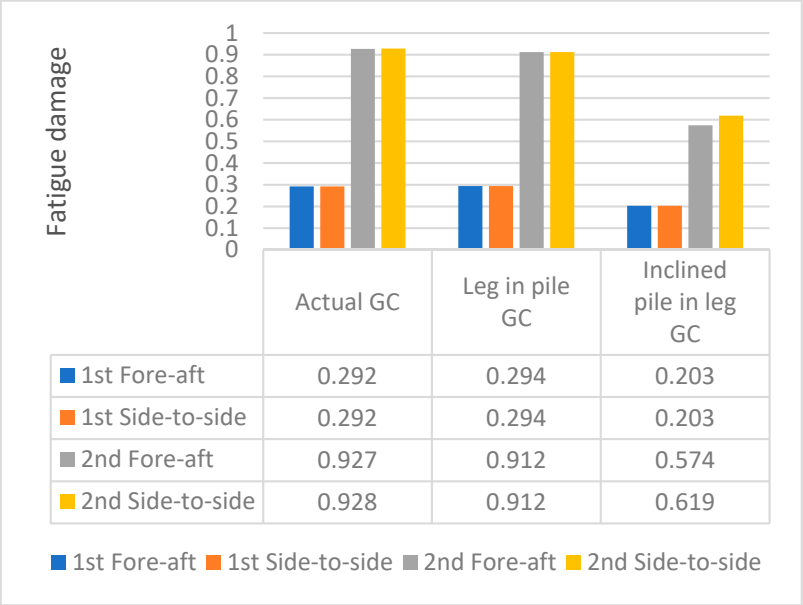


Figure 21. Effect of grouted connection on the dynamic response.

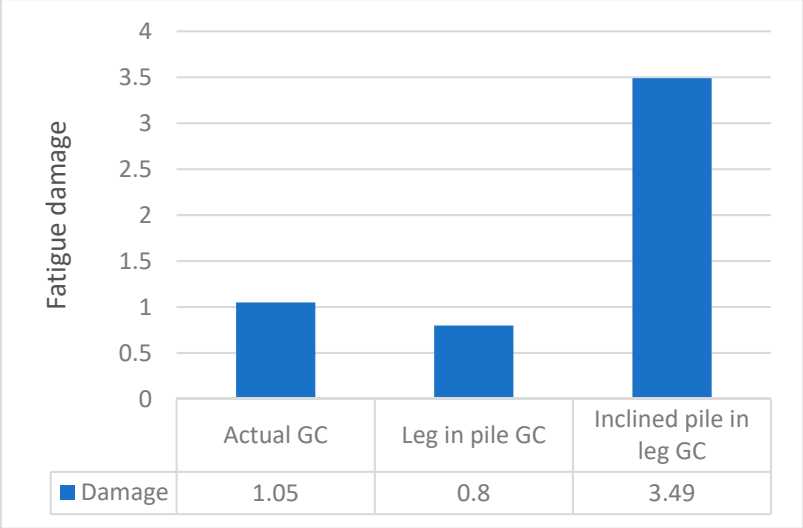


Figure 22. Effect of grouted connection on fatigue damage.

6. Conclusions

In this study, the effect of different parameters on the structural response of the jacket foundation was observed in terms of dynamic response and fatigue life. The OC4 jacket foundation was developed in Sesam and validated with previous research. The validated model was converted to the super-element model and exported to Bladed, where it was attached to an NREL 5-MW wind turbine. The time-series wind and wave loads were simulated in Bladed to obtain the time-series loads. These time-series loads were exported to the SWM, where FLS analyses were performed. The steps were repeated by keeping identical wind/wave loads, and the effect of marine growth, non-linearity of soil, transition piece's mass and material, scour size, and the length of grouted connection on the dynamic response and fatigue damage was observed by considering the life of 20 years. The fatigue damage of 1 implies that a crack has fully developed.

It was observed that the effect of marine growth was minimal on the structural dynamic response and fatigue damage. However, the non-linearity of the soil has a significant impact on the dynamic response. The original OC4 jacket foundation has a fixed base, and a soil profile of the north sea was included in the model. The damage of the

non-linear model is greater than the original model because of the lower stiffness of the soil model, which results in vibrations of higher amplitude. The effect of non-linearity was further extended to include the scour of different sizes (0.5, 1, and 2 m). The effect of the scour size was insignificant on the first two natural frequencies, but there was a reduction of 3.2% in the third and fourth natural frequencies for a scour of 2 m. The values reduced by 0.7% and 1.32% for the scour sizes of 0.5 and 1 m, respectively—the reduction in the support due to scour caused the damage to increase.

The study also observed the effect of changing the design in the form of the transition piece and grouted connection. The TP with three mass configurations showed that the third and fourth eigenvalue frequencies change significantly, and an inverse relationship was observed between the mass and frequencies. However, the first two frequencies were not altered. The fatigue damage was greater for the heavier TP because of the higher axial force and moments on the joints, which resulted in higher stresses. The material selection between the concrete TP and steel TP showed the need to move to the lighter steel frames to extend the fatigue life.

A unique set of simulations were performed by increasing the length of the grouted connection from the original grouted connection size of 4–6 m for a leg in a pile configuration; this resulted in the increase of the hub height to 90.15 m. The overall effect was an increase in fatigue life because of the greater support. The design configuration was also changed to an inclined pile in a leg; this resulted in the reduction of the first two eigenvalue frequencies near the 1P range. This resulted in a steep rise in fatigue damages near the lower part of the jacket. In terms of fatigue damage, marine growth has a minimum effect and can be ignored. However, the introduction of non-linearity along with scour should be included to increase the accuracy of the results. Moreover, the study recommends the need to adopt steel TP instead of concrete. The length of grouted connection for a leg in a pile configuration can be increased to increase the fatigue life.

An effort was made to minimise the simplifications in the design, which is usually the case due to the cost and complexity of such simulations. This research adds to knowledge by examining the influence of a unique combination of changes in the design, material of the transition piece, and grouted connection on dynamic response and fatigue life. The research also presents in-depth information on the sophisticated design of FLS analysis utilising the super-element approach (mostly used in industry). Future work should include the effect of turbulence intensity and wave-current to improve the results. There is also a scope to study the effect of the diameter and thickness of the members on the structural response. The parameters that can significantly impact the design life of jacket foundations were identified. This can help in extending the design life as well as reduce costs. The increased number of parameters and design changes observed in the TP and grouted connection in the complex time-series simulations significantly contribute to knowledge. The FLS analysis helps identify the weaker joints, and the damage parameter of 1 is considered a failure. However, in reality, it shows that the crack has been initiated, and the structure has not failed. Future work may include crack propagation and fracture mechanics principles to study the actual failure of the joint.

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Nomenclature

OWT	Offshore Wind Turbine
NREL	National Renewable Energy Laboratory
SWM	Sesam Wind Manager
RNA	Rotor Nacelle Assembly
TP.	Transition piece
MSL	Mean Sea Level
FLS	Fatigue Limit State
DLC	Design Load Case
DOF	Degree of Freedom
SCF	Stress Concentration Factor

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Appendix 5
Neo et al (2018)

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European seabass respond more strongly to noise exposure at night and habituate over repeated trials of sound exposure☆

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ABSTRACT

Aquatic animals live in an acoustic world, prone to pollution by globally increasing noise levels. Noisy human activities at sea have become widespread and continue day and night. The potential effects of this anthropogenic noise may be context-dependent and vary with the time of the day, depending on diel cycles in their physiology and behaviour. Most studies to date have investigated behavioural changes within a single sound exposure session while the effects of, and habituation to, repeated exposures remains largely unknown. Here, we exposed groups of European seabass (*Dicentrarchus labrax*) in an outdoor pen to a series of eight repeated impulsive sound exposures over the course of 2 day at variable times of day/night. The baseline behaviour before sound exposure was different between day and night; with slower swimming and looser group cohesion observed at night. In response to sound exposures, groups increased their swimming speed, depth, and cohesion; with a greater effect during the night. Furthermore, groups also showed inter-trial habituation with respect to swimming depth. Our findings suggest that the impact of impulsive anthropogenic noise may be stronger at night than during the day for some fishes. Moreover, our results also suggest that habituation should be taken into account for sound impact assessments and potential mitigating measures.

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1. Introduction

Increasing global energy demand has prompted the energy industry to construct more oil platforms and wind farms at sea. These offshore activities produce a variety of anthropogenic noises, which range from continuous sounds produced by ship traffic and windfarm operation to high-intensity impulsive sounds from seismic surveys and pile driving. Especially, impulsive sounds, which occur at both day and night (Leopold and Camphuysen, 2008; Brandt et al, 2011), have been suggested to negatively affect fishes (Popper and Hastings, 2009a, 2009b; Slabbekoorn et al., 2010).

Fish in close proximity to a loud impulsive sound source may suffer from barotrauma injuries (Halvorsen et al., 2012; Casper et al., 2013a, 2013b). In laboratory settings fish are reported to recover from such injuries within a few weeks (Casper et al., 2012, 2013b), but this may be different for free-ranging fish that need to find food and flee for predators. However, although physical damage may appear a severe impact, it only concerns a small proportion of fish population that is close enough to receive such high-intensity sound. In view of this, the farther-ranging behavioural effects of impulsive sounds at moderate levels may be more concerning for fish populations (Slabbekoorn et al., 2010; Hawkins et al., 2014a).

In response to impulsive sound exposures, fish have been shown to change their swimming behaviour; typified by swimming faster, deeper, in a tighter shoal and further away from a sound source (Hawkins et al., 2014b; Neo et al., 2014, 2015, 2016). Such behavioural responses were actually found to be stronger for impulsive sounds compared to continuous sounds (Neo et al., 2014). Groups of European seabass (*Dicentrarchus labrax*) took longer to return to baseline swimming depth in response to impulsive sounds than to continuous sounds, while it took longer to return to baseline group cohesion levels when the exposures (either impulsive or continuous) had variable amplitude, as opposed to constant. These results highlight the biological relevance of sound intermittency and reveal the limitations of using exclusively sound level or sound exposure level to predict response tendency or disturbance potential of aquatic animals.

Additionally, while the majority of studies investigating behavioural effects of underwater sound have been conducted during the day, impulsive sounds can be experienced by fish throughout their diel cycle which may affect their response level, like with other external stressors. For example, when subjected to air exposure (lifted out of the water), nocturnal green sturgeon (*Acipenser medirostris*) and Gilthead sea bream (*Sparusaurata* L.) increased plasma cortisol more at night than during the day (Lankford et al., 2003; Vera et al., 2014). In contrast, nocturnal Senegalese sole *(Solea senegalensis)* were more affected during the day (López-Olmeda et al., 2013). It is cur-

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rently unknown how the time of day may influence the effects of sound exposure in diurnal species such as the European seabass.

Furthermore, impulsive sounds from seismic surveys or pile-driving may be repeated, with breaks of inactivity, for several weeks or months (Leopold and Camphuysen, 2008; Brandt et al., 2011). Despite this, the impacts of sound on fish behaviour have mainly been studied within a single exposure session and there are a few cases in which the effects of repeated exposures were tested. Nedelec et al. (2016) showed that the Threespot dascyllus (*Dascyllus trimaculatus*) increased hiding behaviour during playback of boat noise, but the effect was no longer significant after one and two weeks of repeated exposures. In another study, larval Atlantic cod (*Gadus morhua*) revealed no experience-related variation in responsiveness in a predator-avoidance test between different rearing noise treatments (Nedelec et al., 2015). Besides these studies, there is little evidence as to whether repeated exposure sessions cause behavioural responses to accumulate, potentially leading to stronger responses through sensitization (e.g. Götz and Janik, 2011), or diminish through habituation (Groves and Thompson, 1970; Grissom and Bhatnagar, 2009; Rankin et al., 2009). Earlier studies have already shown evidence for intra-trial habituation of European seabass to intermittent sounds (Neo et al., 2014, 2015), but inter-trial habituation over repeated trials for this species has yet to be demonstrated.

In the current study, we exposed groups of European seabass each to a series of eight sound exposures in a large outdoor floating pen throughout the diel cycle of the fish. We aimed to answer to the following questions: Do seabass vary consistently in swimming behaviour over the day? Does a sound-induced change in behaviour depend on whether it is night or day? Finally, do seabass habituate to repeated exposures of the same sound stimulus? We expected that the fish would change behaviour upon sound exposure and that the behavioural changes would depend on the time of the day. We also expected that behavioural changes would diminish over subsequent exposures.

2. Materials and methods

2.1. Animal maintenance

We used hatchery-raised European seabass (from Ecloserie Marine de Gravelines, France), approximately 30 cm in length. Before testing, the fish were kept in a cylindrical holding tank (Ø 3.5 m, depth 1.2 m) at Stichting Zeeschelp, the Netherlands where the dark-light cycle was identical to the outdoor conditions. The holding tanks had a continuous inflow of fresh seawater from the nearby Oosterschelde estuary and water temperatures ranged from 14 to 19 °C during the experimental period (August–October 2014). We fed the seabass three times a week with food pellets (Le Gouessant Aquaculture, France), for which amounts were determined by fish number and size and adjusted based on the water temperature. Although previous experience does not affect the validity of the current test for fading responsiveness from the first to the last of a new series of sound exposures, we like to mention that the animals were also used in a previous experiment (Neo et al., 2016). In that experiment, they were exposed to four sound exposures, of which one was identical to the sound exposures in the current experiment. The time between the previous and the current experiment was at least three weeks. These experiments were ethically evaluated and approved by the Animal Experiments Committee (DEC) of Leiden University (DEC approval no: 14047).

2.2. Experimental arena

The experiments were conducted in the Jacobahaven, an artificial cove located at the opening of the Oosterschelde, an estuary of the North Sea. The cove is about 200 m by 300 m in size and 2–5 m deep depending on tides with bottom sediment consisting of mud and sand. The water in the cove is relatively calm due to surrounding dams and a pier which shield the Jacobahaven from wind. Additionally, no boat traffic is allowed within 1 km of the cove, resulting in minimal levels of underwater anthropogenic noise, making it ideal for sound impact studies.

We constructed a floating platform (Fig. 1) in the center of the Jacobahaven using a modular floating dock system (Candock, Canada). We anchored it to dead weights on the bottom with an elastic cable system that kept the platform in place at all tides. The construction consisted of an octagonal walkway surrounding the pen and a square working platform for storing equipment tied to the outer perimeter of the walkway. The octagonal walkway held a net of 3 m depth and a diameter of 11.5–12.5 m (volume 334 m^3) where test fish were held during experimental exposures. The working platform carried an underwater speaker at 2.2 m depth, and supported a work tent (4 × 5 m) that shielded the equipment from weather and served as office space. The work tent was supplied with electricity via an underwater cable from Stichting Zeeschelp. We maintained a distance of 0.5 m between the platform and walkway using a physical buffer of soft buoys to minimise unwanted sound transmission from activity at the working platform to the net pen. Additionally, the working platform could be

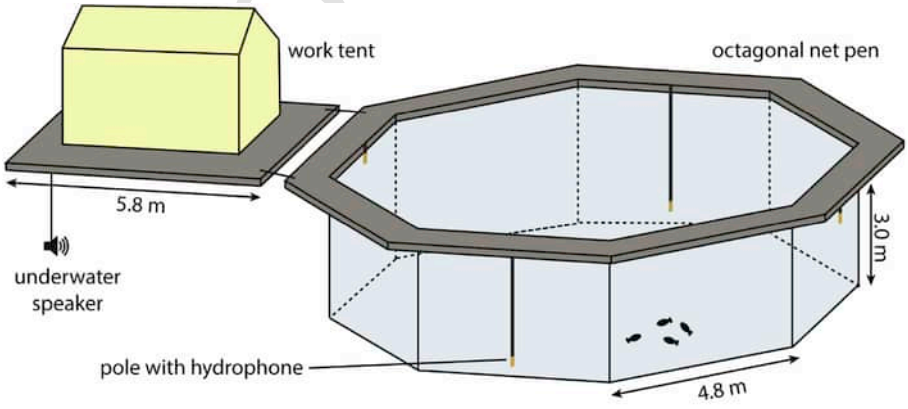

Fig. 1. Schematic of the floating platforms. The underwater speaker was suspended at the center of the far edge of the working platform. The distance from the underwater speaker to the closest side of the net was 7.8 m. The four hydrophones attached to the poles were used to track the test fish via telemetry.

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moved and reattached to one of four positions with respect to the octagonal walkway (North, East, South, and West). Every four trials, the working platform (i.e. the experimental sound source) was repositioned to the next position along the walkway, to control of the potential effects of consistent spatial preference in the experimental area across trials.

2.3. Sound treatment

We exposed the groups of fish eight times to a 1-h impulsive sound treatment consisting of 0.1 s pulses, repeated at a regular repetition interval of 2 s. The sound sample was created in Adobe Audition 3.0 using band-passed brown noise within 200–1000 Hz (48 dB rolloff per octave). This range matches the spectral range of highest hearing sensitivity for European seabass (Lovell, 2003; Kastelein et al., 2008). However, it should be noted that these audiograms are based on sound pressure only and the methods of both papers have important limitations (cf. Ladich and Fay, 2013; Sisneros et al., 2016). The sound was played back with an underwater speaker (LL-1424HP, Lubell Labs, Columbus, US) from a laptop through a power amplifier (DIGIT 3K6, SynQ) and a transformer (AC1424HP, Lubell Labs).

The amplitude levels of the sound treatment were measured at 360 points along a uniformly spaced three-dimensional grid within the octagonal net (120 points at 0.5, 1.5 & 2.5 m depth) prior to the start of the experiment. These measurements were repeated with all four working platform (i.e. speaker) positions during both flow and ebb tide (8 replicate sets). We measured the sound pressure levels (SPL) and sound velocity levels (SVL) using a M20 particle motion sensor (GeoSpectrum Technologies, Canada). The sensor was comprised of three orthogonal accelerometers and a hydrophone. The data output was logged at 40 kHz on a laptop via an oscilloscope (PicoScope 3425, Pico Technologies, UK) using an application written in Microsoft Access via Visual Basic for Applications. The data were subsequently analysed in MATLAB using a 200–1000 Hz bandwidth filter and power spectral density plots were generated using R (Fig. 2). For the particle velocity measurements, we calculated the root-mean-square, zero-to-peak and single strike energy of particle velocity for each accelerometer channel then combined the values using vector addition to result in an omnidirectional measure of particle motion which was comparable to SPL. We then averaged these values with respect to their positions relative to the working platform (8 replicates per aggregate) to calculate the presumed average sound gradient over all experimental trials. The results revealed a clear gradient in amplitude levels with an increasing distance from the speaker within the experimental arena. The mean zero-to-peak sound pressure level ($SPL_{z\text{-}p}$) and sound velocity level ($SVL_{z\text{-}p}$) were 180–192 dB re 1 µPa and 124–125 dB re 1 nm/s, respectively. In addition, the mean single-

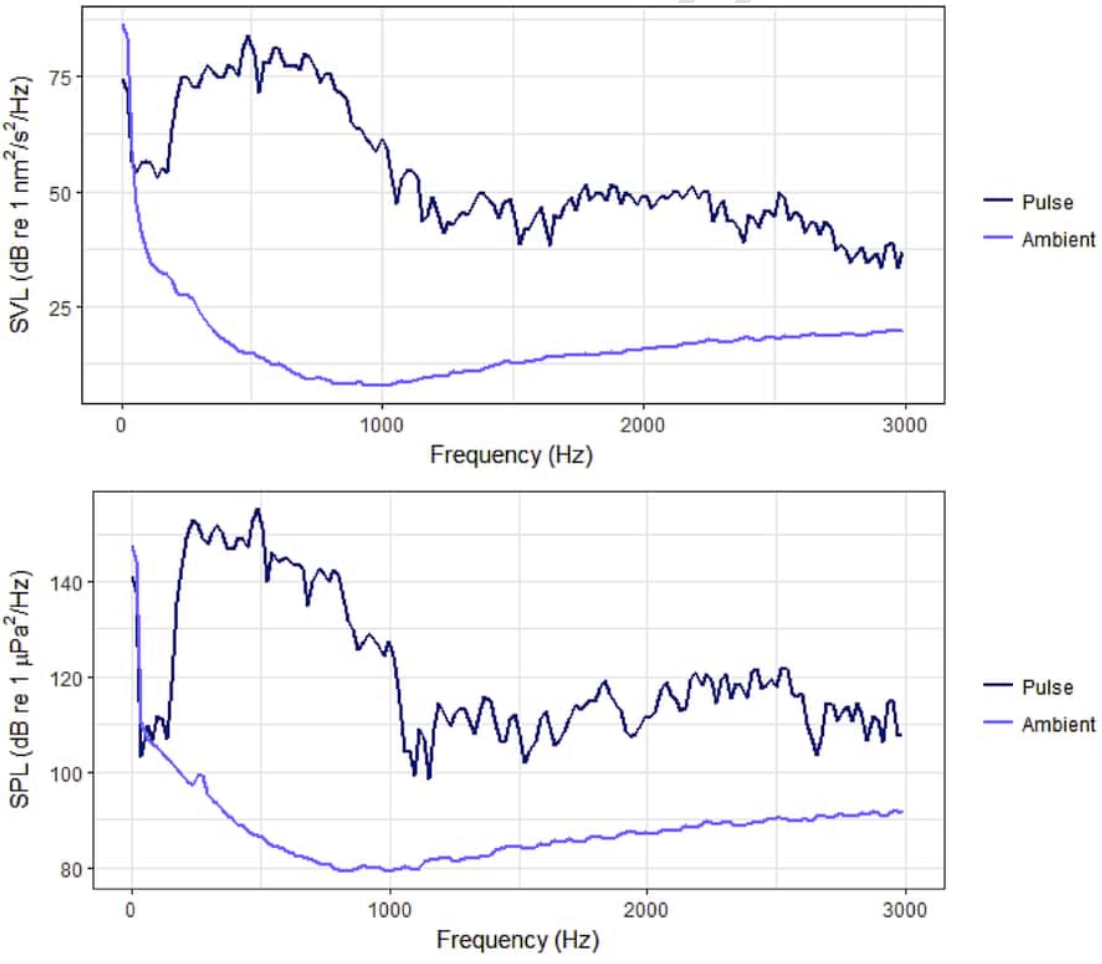

Fig. 2. Power spectral density (PSD) plots of sound velocity level (SVL, top) and sound pressure level (SPL, bottom) of a single pulse and the ambient condition in the pen. These PSD's were made using a sound recording in the pen at 17.5 m from the speaker and 1.5 m depth. For generating the PSD's, we used a window length of 2048 with a Hamming window type.

strike sound exposure level (SEL_{ss}) and velocity exposure level (VEL_{ss}) were 156–167 dB re 1 μPa^2s and 99–100 dB re 1 nm^2/s respectively.

2.4. Experimental design

We exposed each of sixteen groups of four fish (N = 16, 64 fish) to an impulsive sound treatment eight times during two consecutive days (Fig. 3). Each group of fish was transported to the net pen in a black plastic container (56x39 × 28 cm) with oxygen tablets (OxyTabs, JBL, Germany) to ensure sufficient oxygen levels. The fish were allowed to acclimate for at least 20 h before the start of the first exposure. Half of the groups started with the first trial of the exposure series during the day and the other half at night. The exposures took place during ebb tide (starting 1.5 h after the high tide) and flood tide (ending 1.5 before the high tide), when the water depth ranged between 3 and 4 m for all the trials. Due to the tides, a subsequent trial started either 3 h or 7.5 h (alternating) after the end of the previous trial. Each trial lasted for 1.5 h and consisted of 60 min of sound exposure and 15 min of silence before and after. We arrived at the platform 30 min before the start of the trial, where we would then record the light intensity, weather condition and the water temperature, which were used as covariates in the statistical analyses. During the trial, we waited quietly at the working platform until after the last exposure, where we then lifted the net pen, caught the fish with a scoop net and transported the group of fish back to the onshore holding tank.

2.5. Acoustic telemetry

We analysed the swimming patterns of the four seabass individuals per trial with 3D telemetry using acoustic tags (Model 795-LG, HTI, US). We set the tags to emit 0.5 ms long pings of 307 kHz (inaudible to the fish) at different repetition intervals (995, 1005, 1015 and 1025 ms) in order to identify the four unique swimming tracks. The fish were externally tagged under the first and second dorsal fin (cf. FISHBIO, 2013). Tags were reused and a maximum of 8 fish were tagged at any given time: We tagged the next group of individuals while the current group was still in the experimental trial. After the tagging procedure, the fish were kept in a recovery tank (1.20x1.00 × 0.65 m), which had a continuous inflow of fresh seawater from the Oosterschelde. The fish were allowed to recover for at least two days before being transported to the floating pen. In the pen, the pings from the acoustic tags were recorded by four hydrophones (Model 590-series, HTI, US) attached to the octagonal walkway (Fig. 1). The signals were then processed by an acoustic tag receiver (Model 291, HTI, US) and transferred to a connected laptop. The data were further processed with software from the manufacturer (MarkTags v6.1 & AcousticTag v6.0, HTI, US). This resulted in 3D positions per each individual per approximately 1 s intervals. The positional information was then used to calculate the group behavioural parameters: swimming speed, swimming depth, average inter-individual distance (group cohesion) and distance from the speaker (*cf* Neo et al., 2016).

2.6. Statistics

We first examined behavioural parameters in a 5 min segment immediately before the onset of the each sound exposure to see if baseline behaviours varied depending on the exposure sequence (order) and the time of the day. We categorised the time of the day into 'day' or 'night', depending on whether the trial started before or after the sunrise/sunset of the day. We modelled the baseline behaviours using a linear mixed effects model, treating the group ID as a random effect and exposure sequence (1–8) and time of day (day/night) as continuous and categorical fixed effects, respectively. In addition, we also used time of day, tide, and water temperature as additional fixed effects covariates. We selected the best model using backward stepwise selection based on Akaike information criteria (AIC). Subsequently, the same modelling procedure was applied to the behavioural changes caused by the sound exposure, where the responding variable was instead the change in swimming behaviour values between the 5 min segments immediately before and after the onset of each sound exposure. We also performed one-sample t-tests to see if the calculated differences were significantly larger than zero.

3. Results

We compared the pre-playback baseline behaviour of the fish between day and night (69 and 59 trials respectively) (Fig. 4a). At night, the fish swam significantly slower (linear mixed model: $F_{1,94} = 5.312$, $P = 0.023$) in groups with significantly lower cohesion (linear mixed model: $F_{1,98} = 13.799$, $P < 0.001$). There was a non-significant trend that they also swam higher up in the water column (linear mixed model: $F_{1,107} = 3.014$, $P = 0.085$), at similar distance from the speaker. Upon sound exposure, the increase in group cohesion was significantly larger at night (linear mixed model: $F_{1,89} = 3.954$, $P = 0.050$) (Fig. 4b). There was also a non-significant trend that the increase in swimming speed was also larger at night (linear mixed model: $F_{1,95} = 3.671$, $P = 0.058$). Subsequent one-sample t-tests showed that only increases in swimming speed and swimming depth at night were significantly larger than zero (one-sample *t*-test: $t_{57} = 3.782$, $P < 0.001$; $t_{57} = -2.008$, $P = 0.049$ respectively). There was also a non-significant trend that increase in group cohesion at night was larger than zero (one-sample *t*-test: $t_{53} = -1.716$, $P = 0.092$). Within the 60 min exposure trials, all the behavioural

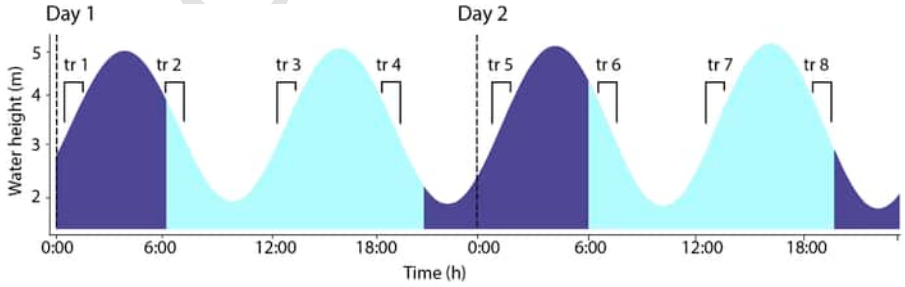

Fig. 3. Tide table showing the sound trial exposure scheme. All eight trials took place over two days when the water depth was 3–4 m. Dark blue indicates night time and light blue indicates day time. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

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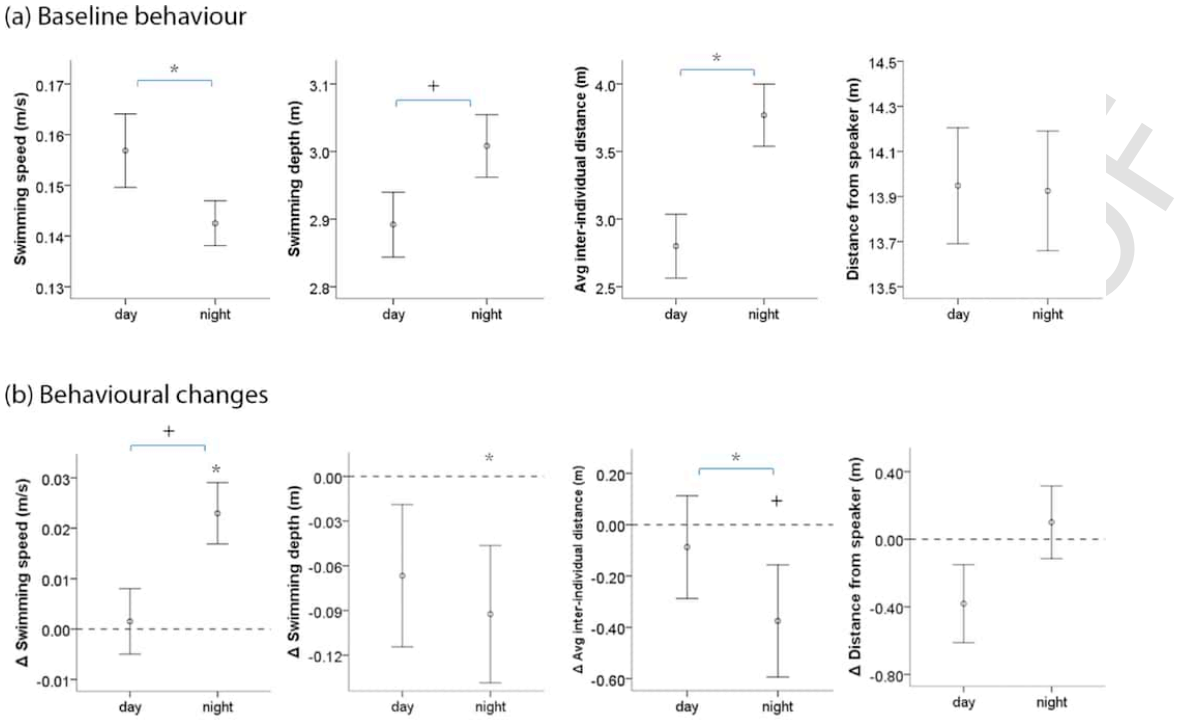

Fig. 4. (a) Baseline behaviour (mean ± SE) during the day and during the night for swimming speed, swimming depth (from bottom), average inter-individual distance and distance from the speaker. (b) Behavioural changes from before to the start of sound exposure during the day and during the night. An asterisk (*) denotes a significant difference ($P \leq 0.05$) and a plus (+) denotes a non-significant trend ($0.05 < P \leq 0.1$). The symbol between the bars indicates a difference between day and night, and the symbol above the bars indicates a difference from zero.

changes reverted back to baseline levels, indicating intra-session habituation (Neo et al., 2014, 2015, 2016). For inter-session habituation, we found that changes in swimming depth diminished significantly with subsequent exposure sessions (linear mixed model: $F_{1,57}=4.002$, $P=0.050$) (Fig. 5). For group cohesion, we found significant interaction between the time of the day and the trial order (linear mixed model: $F_{1,86}=4.353$, $P=0.040$), which was due to a subtle decline in response over time at night and a change in response from less to more cohesion during daytime.

4. Discussion

We showed significant variation in swimming patterns throughout the diurnal cycle of European seabass in semi-captive conditions in an outdoor floating pen. Comparing baseline behaviour at night to

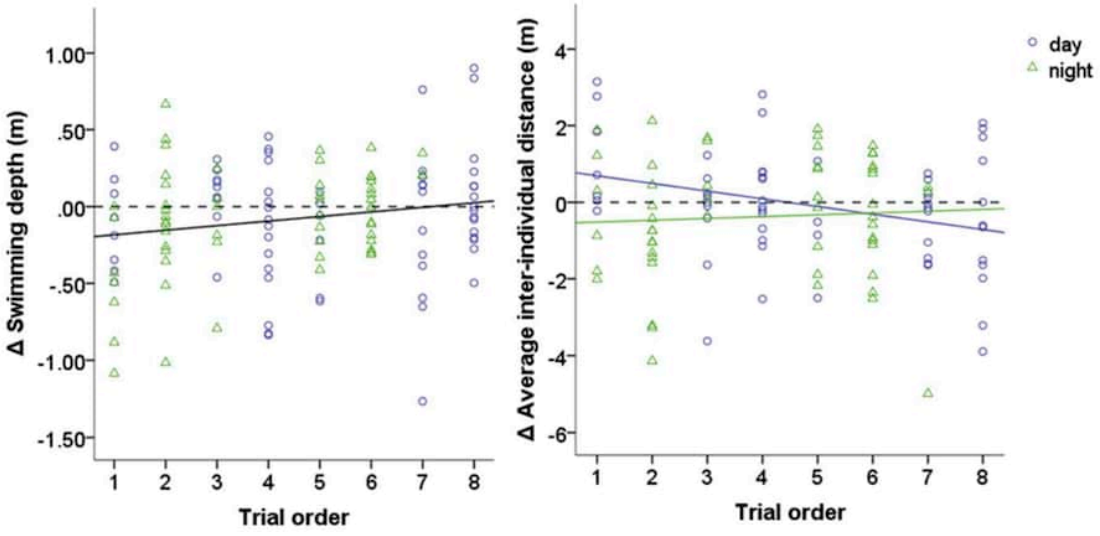

Fig. 5. Change in swimming depth (left) and average inter-individual distance (right) throughout the series of eight trials. The change in swimming depth diminishes with subsequent trials, indicating inter-trial habituation. The influence of trial order on the change in group cohesion is different between day and night.

during the day, the fish swim significantly slower and in a looser shoal, and also tended to stay nearer to the surface (non-significant trend). When exposed to sound, the fish increased their swimming speed, swimming depth and group cohesion. These changes were stronger at night (significant for speed and depth and a non-significant trend for group cohesion). Additionally, the observed changes in swimming depth gradually reduced for subsequent sound exposures, indicating inter-trial habituation.

4.1. Stronger response at night

The European seabass in our study were spatially restricted by the floating pen and relatively shallow water but showed clear diurnal swimming patterns. Such daily behavioural rhythms have also been shown in free-ranging dusky grouper (*Epinephelus marginatus*) and yellow fin tuna (*Thunnusal bacares*), where the fish swam closer to the surface at night (Mitsunaga et al., 2013; Koeck et al., 2014) or in sprat (*Sprattus sprattus*), who form dense schools during the day and disperse during the night (Hawkins et al., 2012). This daily rhythmicity in movement is possibly driven by diel cycles in hormones and metabolites (Kühn et al., 1986; Pavlidis et al., 1999; De Pedro et al., 2005; Polakof et al., 2007). For example, our study species, the European seabass, has been shown to have significant daily variation in plasma glucose, insulin and cortisol (Planas et al., 1990; Cerdá-Reverter et al., 1998). The daily peaks of these parameters depend on whether the species is diurnal or nocturnal. Diurnal species typically produce most cortisol at the start of the day, while nocturnal species at the start of the night (Montoya et al., 2010; Oliveira et al., 2013; Vera et al., 2014).

Upon sound exposure, European seabass in our study showed stronger behavioural changes at night compared to during the day. The influence of the time of the day on stress response during exposure to some external stimulus has been shown in three nocturnal fishes (Lankford et al., 2003; López-Olmeda et al., 2013; Vera et al., 2014). Two of the species showed stronger cortisol increase at night and one during the day in response to experimental exposure to air (taking fish out of the water), suggesting that daily variation in sensitivity to stressors is species-specific. The mechanism of such differential sensitivity is still unknown, although it may be related to potential daily rhythms in the sensitivity of the associated endocrine glands (Engeland and Arnhold, 2005; Dickmeis, 2009). The response to sound exposure during the day was particularly small compared to a previous experiment conducted before the current experiment using the same setup on the same animals. In the previous experiment, the fish were exposed to a series of four sound treatments varying in their temporal structure (one of the sound treatments was re-used in the current study), which took place during the day over a two-day period (Neo et al., 2016). This prior experience may have induced anticipation in the fish to the ensuing sound exposure in the current study, yielding lower response levels, especially during the day. Nevertheless, the fish still responded strongly to sound exposure at night, potentially because they were woken up from their resting or sleep-like state (Zhdanova, 2006, 2011). Such disruption can be particularly harmful to the fish as it may affect their daily activities. For example, when subjected to unpredictable and chronic exposure to stressors at night compared to during the day, zebrafish (*Danio rerio*) learned less well in an inhibitory avoidance task (Manuel et al., 2014).

Despite low response levels during the day, our observations suggest that sound exposure at night may have more impact on European seabass than during daytime. However, application of these findings with regard to managing anthropogenic marine activities requires careful consideration, as some species within an affected area may actually be more sensitive to stress during the day (López-Olmeda et al., 2013). Also, care should be taken when extrapolating results from hatchery-reared fish in a constrained set-up to wild free-ranging fish. Nonetheless, our findings suggest that the responsiveness of fish to sound exposure may be affected by the natural rhythms in physiology as well as the environmental contexts. Consequently, such factors should also be considered when evaluating potential impacts of noisy offshore activities.

4.2. Inter-session habituation

European seabass not only habituate to sound exposure within a session, as shown in previous experiments (Neo et al., 2014, 2015, 2016), they also habituated over subsequent exposures, as shown in the current study. Such inter-trial reduction in behavioural response has also been reported for the coral reef fish, *Dascyllus trimaculatus*. Its hiding behaviour during boat noise diminished during a two-week period with repeated playback of boat noise. This reduced behavioural response was in line with diminished elevated ventilation rates after one and two weeks (Nedelec et al., 2016). Other relatively long-term studies that looked into physiological measures showed similar results. Post-larval European seabass, that had been exposed to impulsive sound for 12 weeks, no longer showed elevated ventilation rates upon exposure of the same noise type (Radford et al., 2016). In a split-brood experiment using larval Atlantic cod, two days of noise treatment reduced growth whereas the growth had converged again at the end of the experiment which lasted for 16 days (Nedelec et al., 2015).

In the current study, the European seabass reduced the change in swimming depth at the onset of sound exposure. Compared to the intra-trial habituation of earlier studies (Neo et al., 2014, 2015, 2016), the inter-trial habituation was less prominent. For example, inter-trial habituation only occurred with swimming depth, but not for the other test parameters. The lack of inter-trial habituation in other parameters suggests that the fish may not have completely habituated to repeated exposures. However, it can also be explained by the more variable nature of these responses. Furthermore, the behaviour of the fish was constrained by the floating pen set-up and absolute levels or the nature of behavioural changes in our study should not be taken to extrapolate to the outside world. Nevertheless, relative differences with context (day and night) or variation among subsequent exposures provide conceptual insights and can be considered a proof of principle.

It is debatable whether habituation is necessarily beneficial to the fish under sound exposure (Bejder et al., 2009). On the one hand, habituation may reduce spatial and distributional changes, which is critical when a site is crucial for foraging or spawning. On the other hand, habituation may also cause fish to stay within an affected area, while still causing physiological stress (Anderson et al., 2011; Filiciotto et al., 2013), auditory masking (Vasconcelos et al., 2007) and attentional shifts (Purser and Radford, 2011; Simpson et al., 2014; Shafiei Sabet et al., 2015). Hence, more insights into the consequences of fish habituation to repeated sound exposures (Davis, 1970; Chanin et al., 2012; Neo et al., 2015) and specific features such as interval regularity of repeated trials (Nedelec et al., 2015; Shafiei Sabet et al., 2015; current study), are critical for valid impact assessments.

5. Conclusion

Our study showed that European seabass responded more strongly to sound exposure at night and that they habituated to repeated expo-

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sures. These findings demonstrate that environmental context and exposure experience may modulate sound impact on fish due to noisy human activities. Consequently, mitigation efforts aiming at minimising sound impact should take these factors into account when devising pile-driving or seismic survey operations. Our study did not aim at assessing absolute thresholds to extrapolate to real-world conditions, but the natural water body conditions and the relatively large swimming area in the floating pen provide fundamental insights and may help in predicting variation in potential for sound impact between day and night and between brief and long-term or repeated exposure conditions. However, studies on free-ranging fish and exposure conditions in deeper water are needed to gain critical knowledge for impact assessments and potential for mitigation.

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Seabass behaviour in a pen varied between day and night. Responses to sound were stronger at night and seabass showed inter-trial habituation over eight repeated sound exposures in two days.

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Appendix 6
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Acoustic dose-behavioral response relationship in sea bass (*Dicentrarchus labrax*) exposed to playbacks of pile driving sounds

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ABSTRACT

The foundations of offshore wind turbines are attached to the sea bed by percussion pile driving. Pile driving sounds may affect the behavior of fish. Acoustic dose-behavioral response relationships were determined for sea bass in a pool exposed for 20 min to pile driving sounds at seven mean received root-mean-square sound pressure levels [SPLrms; range: 130–166 dB re 1 μPa; single strike sound exposure level (SEL_{ss}) range: 122–158; 6 dB steps]. Initial responses (sudden, short-lived changes in swimming speed and direction) and sustained responses (changes in school cohesion, swimming depth, and speed) were quantified. The 50% initial response threshold occurred at an SEL_{ss} of 131 dB re 1 μPa^2 s for 31 cm fish and 141 dB re 1 μPa^2 s for 44 cm fish; the small fish thus reacted to lower SEL_{ss} than the large fish. Analysis showed that there is no evidence, even at the highest sound level, for any consistent sustained response to sound exposure by the study animals. If wild sea bass are exposed to pile driving sounds at the levels used in the present study, there are unlikely to be any adverse effects on their ecology, because the initial responses after the onset of the piling sound observed in this study were short-lived.
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1. Introduction

Many marine organisms rely on acoustics to survive (Hawkins and Myrberg, 1983; Richardson et al., 1995; Popper et al., 2003). Fish, for instance, engage with their surroundings through sound, using sound in hunting, territorial behavior, mate attraction, spatial orientation, and predator avoidance (Popper et al., 2003). Such ecologically important behaviors can be negatively influenced by anthropogenic noise, which often has energy in the low frequencies (<1 kHz, within the hearing range of most fish species; Popper and Hastings, 2009), and which is increasing worldwide due to increasing anthropogenic activities (National Research Council, 2003, 2005). However, little is known about the effects of anthropogenic noise on marine fish, and information is needed for realistic environmental impact assessments (Popper et al., 2004; Normandeau Associates, Inc., 2012; Hawkins et al., 2014b).

The number of offshore wind turbine parks in coastal waters will increase worldwide in the coming decades. Most wind turbines are attached to the ocean floor by means of pile driving. Percussion pile driving produces sounds of high amplitude with energy mostly below 1 kHz (Norro et al., 2013). Pile driving sounds may negatively affect fish, both behaviorally and physiologically (Popper and Hastings, 2009; Hawkins et al., 2014a). Information is available on the hearing sensitivity of only about 100 of the 27,000 marine fish species; most audiograms indicate that their greatest sensitivity to sounds falls within the 0.1–2 kHz range (Popper et al., 2003), overlapping with the spectrum of pile driving sounds.

The effects of pile driving sounds on fish have rarely been studied (Bolle et al., 2012; Halvorsen et al., 2012a,b; Casper et al., 2013a,b; Popper et al., 2013; Hawkins et al., 2014a; Radford et al., 2016). The behavioral responses of marine fish to specific sounds vary greatly depending on the fish species (Moulton and Backus, 1955; Hawkins, 1986; Myrberg, 1990; Popper and Carlson, 1998; Luczkovich et al., 2000; Kastelein et al., 2007, 2008). The effects of sounds depend on the sound parameters (such as received level, spectrum, continuous versus intermittent, tonal versus impulsive, duty cycle, kurtosis; Blaxter and Hoss, 1981; Kastelein et al., 2008; Neo et al., 2014) and context (Ellison et al., 2012; Hawkins and

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Popper, 2014), and may also depend on the size of the fish, because the size of the swim bladder determines its resonance frequency (Blaxter and Hoss, 1981; Schaefer and Oliver, 1998).

The European sea bass (*Dicentrarchus labrax*) is a fish species that occurs in large numbers throughout the Mediterranean Sea, along the North Sea coasts, and in south-western Norwegian waters (Lart and Green, 2011). In its distribution area, many wind farms have been built by using pile driving, and many more will be built in the near future. Offshore pile driving sounds may affect the behavior of sea bass, since their hearing sensitivity range (100–1500 Hz; Lovell, 2003) overlaps with the spectrum of pile driving sounds.

Effects of sound on sea bass behavior have been investigated. Kastelein et al. (2007) studied the effects of seven commercially available pingers (designed and used to reduce harbor porpoise bycatch in fisheries; frequency range: 3–20 kHz) on sea bass in a large pool; the sea bass decreased their speed in response to one pinger and swam closer to the surface in response to another. Kastelein et al. (2008) reported the 50% startle response threshold sound pressure level (SPL) for sea bass in a large pool, for tonal signals between 0.1 and 0.7 kHz; compared to the other 7 fish species that were tested, the sea bass reacted to relatively low sound levels in a relatively wide frequency range (i.e., it is highly responsive to sound). Neo et al. (2014) studied the effect of the timing of sounds on behavioral recovery from noise impact in sea bass in a large pool; intermittent exposure resulted in significantly slower behavioral recovery to pre-exposure levels than continuous exposure. Neo et al. (2016) found that in impulsive sounds, the pulse repetition rate influenced immediate and delayed behavioral changes in sea bass in a large pool. Radford et al. (2016) exposed sea bass in small tanks to long-duration playbacks of pile driving sound and seismic sounds. Naïve fish showed elevated ventilation rates, indicating heightened stress, in response to the impulsive sounds. However, fish exposed to playbacks of pile-driving sounds or seismic sounds for 12 weeks no longer responded with an elevated ventilation rate to the same sound type. Fish exposed long-term to playbacks of pile-driving sounds also no longer responded to short-term playbacks of seismic sound. The lessened response after repeated exposure was probably driven by habituation or a change in hearing threshold, which helps explain why fish that experienced impulsive sounds for 12 weeks were similar to control fish in terms of stress, growth and mortality.

Although the effects of various sounds on sea bass have been investigated, the pile driving sound dose-behavioral response relationship has not been studied. Therefore, the aim of the present study was to determine the acoustic dose-behavioral response relationship for sea bass exposed to playbacks of pile driving sounds in a large pool. Both initial responses (sudden, short-lived changes in swimming speed and direction, also called 'startle responses'), taking place just after the sound's onset, and sustained responses (changes in school cohesion, swimming depth, and relative swimming speed) were quantified.

2. Materials and methods

2.1. Study animals

European sea bass were selected as the study species, based on their economic importance in North Sea fisheries, their availability, their ease of maintenance in captivity, and the temperature range at which they can be kept (the water temperature at the study facility was influenced by the environment). The sea bass were from a commercial hatchery (Ecloserie Marine, Gravelines, France). Fish in two length groups were obtained. They came from the same stock. The large fish were one year older than the small fish. At the time of the study, the mean total body lengths (from the tip of the snout to the tip of the longer lobe of the caudal fin) of the two groups of fish were 31 cm and 44 cm (Table 1). Each group was tested in a different year; the small fish in 2013 and the large fish in 2014. The sea bass were tested in schools of four fish taken from one of the two size groups.

The animals were fed *ad lib*. on pieces of raw fish (food was given until the animals stopped eating) twice a week, before and throughout the study. The amount eaten depended on the water temperature, as water temperature determines the body temperature and thus the metabolic rate of fish.

2.2. Study area

For at least four months before each individual was tested, the fish were kept in their size groups in round white polyester holding tanks 2.2 m in diameter, with a water depth of 1 m. These tanks and their water systems were very quiet (there were no pumps); the underwater noise levels were below those occurring during Sea State 0 (Knudsen et al., 1948). After a school was tested it was placed in another holding tank to ensure that the individual fish were not used again.

The experiments were conducted in an outdoor research pool at the SEAMARCO Research Institute in Wilhelminadorp, The Netherlands. The rectangular pool (7.0 m long, 4.0 m wide; water depth 2.0 m) was made of plywood covered on all sides with fiberglass (Fig. 1). To reduce sounds and vibrations from the environment entering the pool, it was set into a 1 m deep hole in the ground, resting on a layer of rubber tiles, and the sides below ground level were covered with a layer of 3 cm thick Styrofoam. To reduce sound reflection in the pool the pool walls were covered with coconut mats (with 3 cm long fibers) and the floor was covered with a 20 cm thick layer of sand.

To reduce predation by birds, algal growth, impact of noise from rain, and glistening of the water surface, and to create a more even light pattern, a slanting roof (9 m × 6 m) was built above the pool. To improve the video images, artificial lighting was used during all sessions. The light was switched on at least 10 min before a session began.

The water was pumped in continuously from the nearby Oosterschelde (a lagoon of the North Sea), so that all the water in the pool was replaced each day. The salinity was 30–33‰. To ensure the good water clarity needed to film the fish, the water was circulated via a sand filter. Water temperature was measured daily (range: 10.5–21.5 °C); a previous study (Kastelein et al., 2007) showed that within the temperature range experienced in the present study, the fish reacted to sound independently of the temperature.

To make the environment in the research pool as quiet as possible, the filter unit had a low noise "whisper" pump. To reduce contact noise entering the pool, the pump and filter unit were placed on rubber tiles, and the filtration pump was connected to the pool with flexible rubber hoses; the underwater noise level when

Table 1
Mean standard body length of the European sea bass (*Dicentrarchus labrax*) used in the study. N = number of individuals used in the tests, SD = standard deviation. A *t*-test confirmed that the fish in each group differed significantly in size (T = −17.02, P = 0.000, DF = 48).

Fish group	Standard body length (cm)			
	Mean	SD	N	Range
Small	30.8	2.3	36	25–35
Large	44.3	4.0	32	39–53

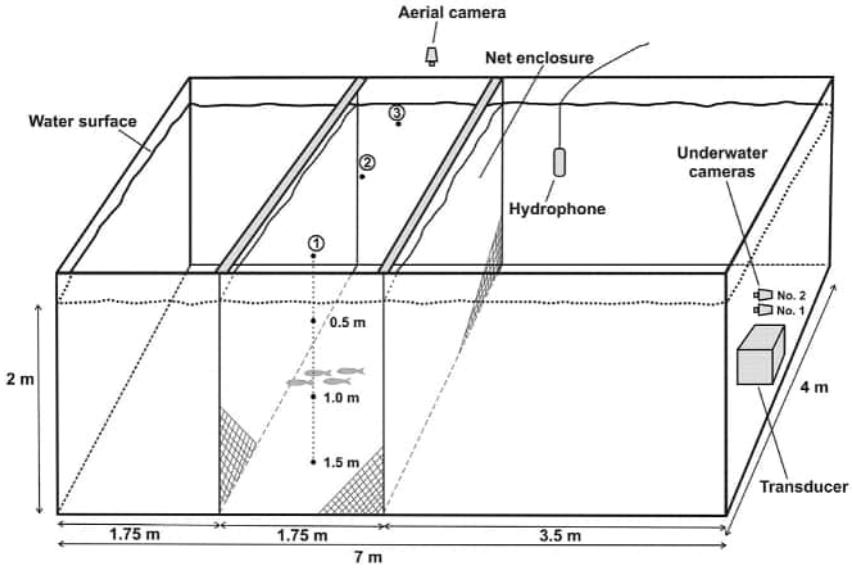

Fig. 1. The research pool in which the acoustic experiments with the sea bass were conducted, indicating the location of the net enclosure, the three cameras, the hydrophone and the underwater loudspeaker (transducer) producing the pile driving playback sounds. The fish and pool are drawn approximately to scale. The three sound exposure level (SEL) measurement locations are indicated with numbers ①-③. The SEL was measured at three depths per location (0.5, 1.0 and 1.5 m deep).

the pump was on was similar to that occurring during Sea State 1 (Knudsen et al., 1948).

To ensure that, during test sessions, all fish could be filmed at all times with an underwater camera, the fish being tested were kept in a net enclosure (4.0 m long, 1.75 m wide and 2 m high in the water) that was rigged over the width of the pool (Fig. 1). The net was made of white nylon (1.5 cm stretched mesh), and kept its shape due to a rectangular PVC frame at the bottom. To increase the contrast between the fish and the sides of the pool for filming, white tarpaulins were placed at the bottom and on the back and sides of the net enclosure, as viewed from the position of the underwater cameras. The tarpaulins were of smooth material, and no air bubbles adhered to them. For each series of sessions, a school of four individual fish was moved into the net enclosure. The school size of four fish was determined by the availability of the fish and the available space in the net enclosure, and made the video analysis feasible. In the net enclosure the fish generally showed schooling behavior. A research cabin placed 1 m from the side of the research pool housed the sound generating equipment, monitors, video recording equipment, and sound recording equipment.

2.3. Background noise and playback sound measurements

The background noise and played back pile driving sounds were measured in the research pool at the beginning and the end of the study. The sound measurement equipment consisted of three hydrophones [Brüel & Kjaer (B&K) – 8106] with a multichannel high frequency analyzer (B&K PULSE - 3560 D), and a laptop computer with B&K PULSE software (Labshop, version 12.1; sample frequency used: 524288 Hz). Before analysis, the recordings were high-pass filtered (cut-off frequency 100 Hz; 3rd order Butterworth filter; 16 dB/octave) to remove low-frequency sounds made by water surface movements. The system was calibrated with a pistonphone (B&K - 4223). The broadband sound pressure level (SPLrms; dB re 1 μPa; ANSI, 1994) of pile driving strike sounds was derived from the received 90% energy flux density and the corresponding 90% time duration (t_9); Madsen, 2005).

The received sound pressure of the impulsive sound was analyzed in terms of the $L_{zero\text{-}peak}$ (i.e., 20 times the base-10 logarithm of the maximum absolute value of the instantaneous sound pressure) and the unweighted single-strike sound exposure level (SEL_{ss}) in dB re 1 μPa^2 s (ANSI, 1986). The SEL was measured at three locations in the horizontal plane in the middle of the net enclosure, and at three depths per location (0.5, 1, and 1.5 m deep; Fig. 1).

Because it is not clear whether sea bass react primarily to the sound pressure or to particle motion, not only the SPL was measured in the net enclosure, but also the particle velocity. Sound pressure and particle motion measurements were made using a calibrated 3-D particle motion sensor (Geospectrum Technologies Inc., Model M20) connected to a digital differential oscilloscope (Picoscope, Model 3425 USB). The acoustic data were then analyzed in Matlab (version R2013a) with a bandpass filter applied from 10 to 3000 Hz, the calibrated range of the vector sensor.

The acoustic metrics zero-to-peak sound pressure level ($SPL_{z\text{-}p}$), zero-to-peak particle velocity level ($PVL_{z\text{-}p}$), single-strike sound exposure level (SEL_{ss}), and single-strike particle velocity exposure level (VEL_{ss}) were calculated over a period of 1 s during the playback of the pile driving recording using the following the equations:

$$SPL_{z-p} = 20\log_{10}\left(\frac{\mathrm{Max}(|P(t)|)}{P_{ref}}\right)$$

$$PVL_{z-p} = 20\log_{10}\left(\frac{\mathrm{Max}(|U(t)|)}{U_{ref}}\right)$$

$$SEL_{ss} = 10\log_{10}\left(\frac{\int_T P(t)^2 dt}{E_{ref}}\right)$$

$$VEL_{ss} = 10\log_{10}\left(\frac{\int_T P(t)^2 dt}{VE_{ref}}\right)$$

P(t) = Instantaneous pressure
U(t) = Instantaneous particle velocity
P_{ref} = Sound pressure reference value
U_{ref} = Particle velocity reference value
VE_{ref} = Particle velocity exposure reference value
E_{ref} = Sound exposure reference value

2.4. Stimulus: playback of pile driving sound

The fish being tested were subjected to played back series of pile driving sounds. The sounds were recorded at 800 m from a 4.2 m-diameter pile being driven into the sea bed as the foundation for a wind turbine for the Dutch offshore wind farm 'Egmond aan Zee' in the North Sea. The strike rate was 2760 strikes/hr, the inter-pulse interval 1.3 s and the duty cycle ~9.5%. A WAV file was made of series of consecutive pile driving strike sounds. The original recordings were sampled at 65 kHz and high-pass filtered at a cut-off frequency of 50 Hz. For the generation of the WAV files used in the study, signals were resampled to 88.2 kHz.

A random section of five strikes from the digitized original recording of series of pile driving sounds (the WAV file) was played back repeatedly by a laptop computer (Acer Aspire ZRI) with a program written in LabVIEW, to an external data acquisition card (National Instruments - USB 6361), the output of which could be controlled in 1 dB steps with the LabVIEW program. The output of the card went through a custom-built buffer and filter, to a power amplifier (Crown - 5000VZ), which drove the transducer (Lubell - LL1424HP) through an isolation transformer (Lubell - AC1424HP). The transducer was placed on the sandy bottom at one end of the pool at 2 m depth (Fig. 1).

The linearity of the system emitting the pile driving sounds was checked during each calibration, and was found to be consistent to 1 dB within a 20 dB range.

The maximum SEL of the pile driving playback sounds produced during the study was the maximum level that the sound emitting system could produce without causing distortion of the signal. This resulted in a maximum SEL_{ss} of 158 dB re 1 μPa^2 s, which is a mean SPL of 166 dB re 1 μPa (based on nine measurements in the middle of the net enclosure; three locations, three depths at each; Fig. 1). At sea (in shallow water; i.e., a few tens of m deep), this SEL_{ss} is reached at ~5.7 km from a piling site (De Jong and Ainslie, 2012). The mean duration of each pile driving playback sound, defined as the time interval between the arrival of 5% and 95% of the total energy (t_{90}; Madsen, 2005), was ~136 ms (range 129–143 ms), depending on the SPL (due to reverberations). Most of the energy was in the 1/3 octave band centered at 630 Hz (Fig. 2). The spectrum of the playback sound in the pool resembled the spectra of pile driving sounds recorded in shallow water at tens of km from a pile driving site (Gabriel et al., 2011; Kastelein et al., 2016). Below 500 Hz, the energy at sea could not be replicated in the pool due to the characteristics of the transducer and the dimensions of the pool. The waveforms of the original recording at sea and of the recording of the playback sound in the research pool are shown in Fig. 3. The SEL in the net enclosure varied little due to reverberations in the pool; it varied by at most 2 dB between the three locations per depth and at most 3 dB between the three depths per location.

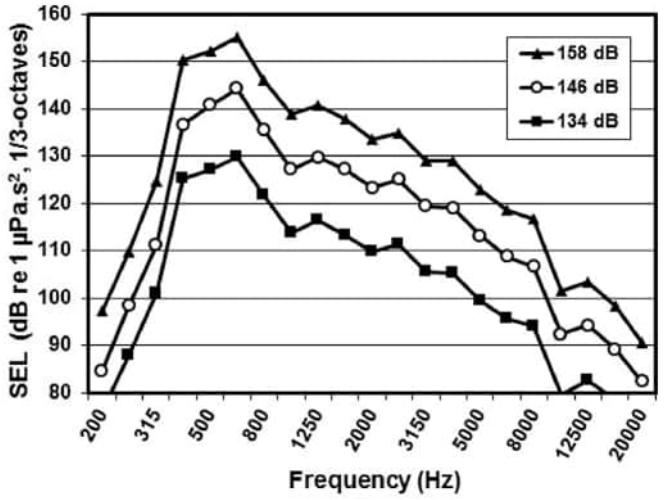

Fig. 2. The 1/3-octave band SEL spectrum of a single played back pile driving sound measured in the net enclosure (location 2 at 1 m depth; see Fig. 1) at three source levels. The SEL_{ss} of 158 dB re 1 μPa^2 s shown was the highest producible level in the study (without causing harmonics). The 1/3-octave band centered at 630 Hz contained the most energy (the resonance frequency of the transducer was at 600 Hz).

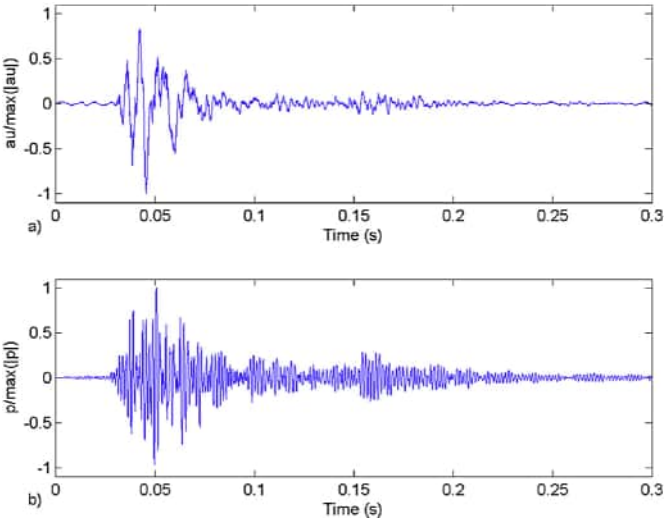

Fig. 3. Waveforms of pile driving strike sounds: a) the original recording, made at 800 m from the pile driving site, derived from the WAV files (au = arbitrary unit); b) a played back pile driving sound in the research pool, showing clear reverberations. The amplitude of the sound pressure is scaled to the maximum absolute value of the instantaneous sound pressure.

During a three-week pilot study with two schools of fish that were not used during the main experiment, the signal SELs for the main study were determined by decreasing the SELs from the maximum that could be produced without deformation of the signal, until no behavioral response was observed in the fish. The range was from SEL_{ss} 122 dB re 1 μPa^2 s (no response) to SEL_{ss} 158 dB re 1 μPa^2 s (maximum producible level without distortion of the signal). The range found was divided into 6 dB steps, resulting in seven SELs to be tested (mean SEL_{ss}: 122, 128, 134, 140, 146, 152 and 158 dB re 1 μPa^2 s; mean SPLrms: 130, 136, 142, 148, 154, 160 and 166 dB re 1 μPa). The SEL is lower than the SPL because the signal duration is less than 1 s (136 ms).

Before a session began, the sound-generating equipment was

checked by playing a WAV file with a 1 kHz continuous wave. The output of the amplifier was measured with a voltmeter (GWInstek GDM8251A) and an oscilloscope (Voltcraft 632FG). If the output was the same as during the calibrations, a test session could begin.

During test sessions, the played back pile driving sounds and background noise were checked for consistency with a custom built hydrophone (10 Hz-120 kHz), a charge amplifier (CCAMS1000-1) and an amplified loudspeaker. The spectra of the sounds were checked for consistency with a spectrum analyzer (Velleman PCSU-1000) on a laptop (Acer Aspire NAV50).

The results of the recordings at 1 m depth at locations 1 and 3 with the M20 sensor (which contained a 3-D particle motion sensor and a hydrophone) are shown in Table 2. The SEL_{ss} measurements with the M20 and the B&K equipment varied by between 0 and 2 dB depending on the measurement location. During the study, the sea bass were exposed to the following six VEL_{ss}: 58, 64, 70, 76, 82, 88 and 94 dB re $(1\ nm/s)^2 \cdot s$.

2.5. Observation equipment

The behavior of the fish was recorded from one side with underwater video camera no. 1 (GOPRO®, HERO3). The camera was mounted in the middle of one end of the research pool at a depth of 1 m (Fig. 1); its wide-angle lens made the entire net enclosure visible in the video image. The images from this camera were used for the analysis of behavior. The camera also recorded the pile driving playback sounds. Camera no. 1 was mounted on a PVC tube, immediately below another underwater video camera (no. 2, SC 2000), the image from which was used for monitoring during sessions and could be seen by the researcher on a laptop screen (ACER, KAV60) via an analog to digital converter (EZ grabber). By viewing the image from camera no. 2 while adjusting the position of the PVC tube, the researcher could optimize the image from camera no. 1 so that the net enclosure was fully visible.

An aerial camera (SC 2000) filmed the fish from above. The images from this camera were made visible to the researcher on a laptop computer (Acer model KAV60) in the research cabin, and served to monitor the fish during the sessions and as a backup.

Via a microphone (Zetagi), the researcher added the date, session number, and fish size to the video recordings. The outputs of the charge amplifier and the microphone were fed into the analog to digital converter, so that video and audio were synchronized. Thus, the behavior of the fish at the exact times of stimulus presentation could be analyzed later.

2.6. Methodology

The sea bass were tested in groups of four that were randomly selected from one of the size groups in the holding tanks. The group size was limited by the size of the net enclosure and four fish were needed for the sea bass to show schooling behavior. Four fish were removed from the holding tank and placed in the net enclosure in the research pool at least two days before the first session was conducted, which allowed them to form a school and acclimatize to the enclosure in the research pen (no test sounds were produced in the acclimation period). The transducer was placed in the pool at the beginning of each working day and remained there until the end of the day. Camera no. 1 was mounted 2 min prior to each session. As the pump in the pool was quiet, it was left on during the experiments, but the valve for sea water supply was closed so that no extra water entered the pool and spilled over the skimmer, and no skimming sound occurred.

A session consisted of a 20 min pre-exposure period, followed by a 20 min test period (exposure to played back pile driving sound), and a 20 min post-exposure period. Within each 20 min exposure session, the animals were exposed to a playback consisting of 920 pile driving strike sounds. One or two sessions were conducted daily between 08.30 and 16.00 h with an interval of at least 3 h. Sessions were conducted 5 days per week. Each school of fish was in the research pool for 14 days: 2 days of acclimation over a weekend, and 10 test days during working days in the following 2 weeks, plus the intervening weekend. This resulted in 14 sessions with each school in 10 working days.

In each session, the fish were exposed to sounds at one SPL. The seven SPLs were tested twice per school, but some of the video recordings (5%) were not good enough for analysis (because they were too dark, the camera image did not cover the entire net area, or the video recorder stopped working during the session). For each school, the sessions with each of the seven SPLs were conducted in random order during the 10 working days. The study was conducted between June and November 2013 (the pilot study, plus tests on nine schools of four small fish with a mean length of 31 cm) and between July and August 2014 (tests on eight schools of four large fish with a mean length of 44 cm). Each of the 36 small sea bass and the 32 large sea bass in the study spent only one 14-day period in the research pool (Table 3).

Great care was taken to make the test environment as quiet as possible. Only the researcher involved in the test was allowed within 5 m of the research pool during test sessions; she remained seated quietly in the research cabin. The only actions she performed were: starting a session by tapping the keypads of the laptops to start the video recordings, and starting the pile driving playback sound by tapping the keypad of the laptop that played the WAV files. During test sessions the background noise in the pool was very low (i.e., below the level of sound associated with Sea State 0, so that it did not influence the results; see Kastelein et al., 2007).

All recordings were coded for date and session number, so that analysis could be conducted partially blind. The analysts (who did not record the sessions) knew what size of fish was being tested and whether the period was pre-exposure, exposure or post-exposure, but were not aware of the sound level.

2.6.1. Initial responses

Initial responses by the fish to the stimuli were short-lived and sudden, and were characterized by changes in swimming speed, swimming direction (sometimes leading to tighter school cohesion), or body posture, including tail-flips or Mauthner reflexes (Eaton et al., 1977); such responses are also called 'startle responses'. Initial responses occurred just after the onset of the pile driving sound playback, and only if the SEL was sufficiently high (Blaxter et al., 1981). If at least one of the fish in a school reacted to the stimulus during the first 2 s of sound exposure, the session was classified as having an initial response.

The video images were analyzed independently by two analysts who were unaware of the SPL of the played back pile driving sound. There was no reason for the analysts to be biased, as we were not

Table 2
The zero-to-peak sound pressure level ($SPL_{z\text{-}p}$), zero-to-peak particle velocity level ($PVL_{z\text{-}p}$), single-strike sound exposure level (SEL_{ss}), and single-strike particle velocity exposure level (VEL_{ss}), calculated over a period of 1 s, recorded with the M20 sensor, at recording locations 1 and 3 (Fig. 1). Recording depth: 1 m. Relative attenuation level −19 dB to avoid clipping of the M20 sensor (corresponding to SEL_{ss} 140 dB re 1 μPa^2 s measured with the B&K equipment).

Parameter	Unit	Location 1	Location 3
$SPL_{z\text{-}p}$	dB ref 1 μPa	155	154
$PVL_{z\text{-}p}$	dB ref 1 nm/s	95	95
SEL_{ss}	dB re 1 μPa^2 s	142	140
VEL_{ss}	dB re $(1\ nm/s)^2$ s	76	75

Table 3
Each school of four sea bass was in the net enclosure for 14 days: two weekend days of acclimation (Accl.), followed by five test days, followed by two weekend days without sound exposure, followed by five more test days. In the 10 test days, the fish were exposed twice to each of the seven single-strike sound exposure levels (SEL_{ss}; on some randomly selected days, two sessions were conducted).

Day in enclosure	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Week day	Sat	Sun	Mon	Tue	Wed	Thurs	Fri	Sat	Sun	Mon	Tue	Wed	Thurs	Fri
Activity	Accl.	Accl.	Test	Test	Test	Test	Test			Test	Test	Test	Test	Test
No. of sessions (example)			1	2	1	2	1			1	2	2	1	1
SEL_{ss} (dB re 1 μPa^2 s) (example)			122	134 & 158	140	128 & 146	152			128	122 & 146	140 & 152	134	158

expecting or predicting any particular response (or lack of response) to the pile driving sound. The initial responses of the fish were in fact so clear that no disagreement between the ratings of the two analysts occurred throughout the study, and responses similar to our definition of initial responses were not observed outside the pile driving sound playback exposure periods.

2.6.2. Sustained responses

Recordings from underwater camera no. 1 were used to quantify sustained responses, such as changes in school cohesion, swimming depth, and relative swimming speed. During the pre-exposure, test, and post-exposure period of each session, an observation of school cohesion, swimming depth, and relative swimming speed was made every 2 min, resulting in 10 measurements per 20-min period. The first pre-exposure measurement was 19 min before the start of sound exposure (T 0). The first test measurement was 1 min after the start of exposure, and the first post-exposure measurement was 1 min after exposure stopped. The mean of the 10 measurements for each period was used for analysis.

In order to quantify school cohesion, the distance between the center of each fish making up each pair of fish in the school (1–2, 1–3, 1–4, 2–3, 2–4, 3–4) was measured in cm from the computer screen (0.5 cm accuracy). Per recording moment, school cohesion was determined as the average distance between the four sea bass (the mean of six measurements). A large distance meant that the fish were far apart or spread out within the research pool (weak cohesion); a small distance meant that the fish were schooling close together (tight cohesion).

Swimming depth within the net enclosure was quantified by allocating each fish in the school to one of four depths within the water column (depth 4 represented the bottom quarter of the research pool, depth 1 represented the top quarter of the pool), and calculating the school mean. A grid was superimposed over the computer screen to allow the analyst to determine the depth of the sea bass. The center of each fish was used to determine its position; when the fish's center was at the boundary between two depths, the depth in the direction in which the fish was swimming was recorded.

At each scoring moment during test and post-exposure periods, the swimming speed relative to the general impression of speed during pre-exposure periods (a subjective measure) was recorded per animal as +1 (faster), 0 (similar), or −1 (slower).

2.7. Analysis

Initial response data (response or no response for at least one fish, per session) were submitted to probit analysis with the stimulus 'level' and the factor 'fish group' (small or large).

Sustained response data (mean school cohesion, mean swimming depth, and mean relative swimming speed) were first submitted to correlation analysis in order to investigate relationships between the three variables and to check for autocorrelation. Autocorrelation did exist, and school cohesion was shown by correlation analysis to be predictive of the other variables (see Results), so this variable only was chosen for further analysis.

For the analysis of school cohesion, a separate repeated-measures ANOVA was carried out for each size of fish. Values for school cohesion were submitted to a model with the random factor 'school' (subject) and the within-subjects fixed factors 'level', and 'period' (pre-exposure, test and post-exposure). The interaction term ('level' x 'period') was included in both initial models, but was not significant, so it was excluded from both final models.

All analysis was carried out with $\alpha = 0{\cdot}05$, by using probit analysis and the General Linear Model procedure, in Minitab 17 statistical software (www.minitab.com); data conformed to the assumptions of the tests used.

3. Results

3.1. Initial responses

The number of sea bass schools in which an initial response was observed at each of the seven mean received SEL_{ss} is shown in Table 4.

Probit analysis showed that louder sounds were more likely to elicit an initial response than quieter sounds, and that small fish responded to quieter sounds than large fish: both the stimulus level (regression coefficient = 0.07, SE = 0.009, Z = 7.51, P = 0.000) and the size of fish (regression coefficient = 0.66, SE = 0.191, Z = 3.47, P = 0.001) had significant effects on the probability of fish showing initial responses (Fig. 4). There was no significant difference in the pattern of response for each of the two fish size groups (test for equal slopes: $\chi^2 = 0.234$; DF = 1, P = 0.629). A Pearson test showed that goodness-of-fit for the model was adequate ($\chi^2 = 13.6$; DF = 11, P = 0.258).

For small fish, the 50% initial response threshold occurred at a mean SEL_{ss} of 131 dB re 1 μPa^2 s (SE = 2.95% CI = 127–135). For large fish, the 50% initial response threshold occurred at a mean SEL_{ss} of 141 dB re 1 μPa^2 s (SE = 2.95% CI = 137–145). Add 8 dB to

Table 4
The number of sea bass schools in which an initial response was observed at each of the seven mean received single-strike sound exposure levels (SEL_{ss}). Each school contained 4 fish. Each school was tested twice at each SEL_{ss}.

Mean SEL_{ss}	Large fish (8 schools)		Small fish (9 schools)	
	Initial response		Initial response	
dB	# of schools	%	# of schools	%
122	2	12	3	17
128	2	12	9	50
134	4	27	10	56
140	9	56	14	78
146	11	69	13	72
152	14	93	17	94
158	10	67	18	100

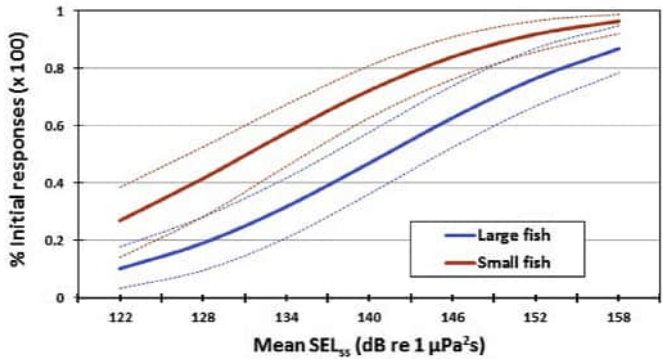

Fig. 4. Cumulative reaction plot, derived from probit analysis, showing modelled % initial responses of large fish (solid blue line) and small fish (solid red line) to pile driving sounds of increasing SEL_{ss} in dB re 1 µPa^2 s (the acoustic dose). Also shown are the 95% CIs (upper and lower limits, dashed lines).

the SEL_{ss} value for SPL (dB re 1 µPa); subtract 64 dB from SEL_{ss} value for VEL_{ss} (dB re (1 nm/s)^2•s.). The SPL, SEL and VEL are provided, as it is not yet clear to which parameter(s) the sea bass in the present study reacted to.

3.2. Sustained response: school cohesion

Correlation analysis, applied in order to investigate relationships between the three sustained response variables and to check for autocorrelation, showed that significant relationships existed for both sizes of fish between school cohesion and both swimming depth and relative swimming speed. Swimming depth and relative swimming speed were not correlated with one another. When swimming higher in the water column (less deep), the fish tended to school more closely together (tighter cohesion). When swimming faster, the fish also tended to school more closely together. Since school cohesion was predictive of both the other sustained response variables, and was the only variable derived from continuous data and conforming to a normal distribution, further detailed analysis of the sustained response was carried out only with this variable.

In the large fish (mean size 44 cm), the repeated-measures ANOVA on school cohesion with the random factor 'school' and fixed factors 'level' and 'period' (pre-exposure, test, and post-exposure) revealed that school cohesion was not significantly affected by 'level' (DF = 6, adjusted MS = 2.68, F = 1.71, P = 0.117) or by 'period' (DF = 2, adjusted MS = 2.23, F = 1.04, P = 0.355). The random factor 'school' had a significant effect on school cohesion (DF = 7, adjusted MS = 38.7, F = 18.0, P = 0.000), showing that individual differences existed in the behavior of the different schools of fish that were tested. Most of the variation in school cohesion could be attributed to these individual differences. Even in a reduced repeated-measures ANOVA including only the highest level (SEL_{ss} 158 dB re 1 µPa^2 s; not including the factor 'level'), school cohesion was not affected by 'period' (DF = 2, adjusted MS = 2.06, F = 1.94, P = 0.160).

In the small fish (mean size 31 cm), the repeated-measures ANOVA on school cohesion with the random factor 'school' and the fixed factors 'level' and 'period' (pre-exposure, test and post-exposure) revealed that school cohesion was significantly affected by 'level' (DF = 6, adjusted MS = 11.5, F = 4.80, P = 0.000), but not by 'period' (DF = 2, adjusted MS = 6.18, F = 2.57, P = 0.078). Post-hoc Tukey pairwise comparisons of the levels revealed significant differences in school cohesion only between SEL_{ss} 128 dB re 1 µPa^2 s (weaker school cohesion; i.e., larger mean distance between fish in a school), and 140 dB re 1 µPa^2 s (tighter school cohesion; i.e., smaller mean distance between fish in a school). The random factor 'school' also had a significant effect on school cohesion (DF = 8, adjusted MS = 40.8, F = 17.0, P = 0.000), showing that individual differences existed in the behavior of the different schools of fish. Most of the variation in school cohesion could be attributed to these individual differences. In a reduced repeated-measures ANOVA including only the highest level (SEL_{ss} 158 dB re 1 µPa^2 s; not including the factor 'level'), school cohesion was not affected by 'period' (DF = 2, adjusted MS = 5.89, F = 3.13, P = 0.056). Cohesion did become tighter during the test period, but not significantly.

In both small and large fish, initial ANOVAS (not shown; non-significant interaction terms removed from the final models shown above) revealed that the interaction term between 'level' and 'period' was not significant, showing that fish responded similarly at all sound levels and in all periods: the pattern of response was consistent.

Overall, analysis showed that there is no evidence, even at the highest sound level, for any consistent sustained response to sound exposure by the study animals.

4. Discussion and conclusions

4.1. Evaluation

The size of their enclosure influences the general swimming behavior of many fish species. Before the fish were placed in the net enclosure in the large research pool, they were kept in much smaller circular holding tanks, in which they swam very slowly or not at all. In the net enclosure in the large research pool, the fish were much more active; they behaved like fish in a previous study that had been kept in the entire pool (Kastelein et al., 2007). So, although the research pool was far from a natural environment, it was a much better study area than the smaller tanks used in many studies on responses of marine fish to sound.

The hatchery that the animals came from had a water filtration system that was relatively quiet, so the study animals had probably not been exposed to higher sound levels than wild conspecifics. The site for the SEAMARCO Research Institute was selected because of its remote location and quiet environment, the research pool was designed specifically for acoustic research, and the area around the pool was strictly controlled (nobody was present within 5 m, except the researcher who sat quietly in the research cabin), so there were few or no transients in the background noise. The pool environment was kept quiet to prevent behavioral responses from occurring to sounds other than the piling sounds. Both groups of fish were housed at the SEAMARCO Research Institute in similar holding tanks and in the same research pool, both experienced the same water temperature range, and the equipment set-up and methodology was exactly the same for each group.

At sea, fish may derive information about the distance and direction of a sound source from reflections of sound from the sea bed, from the water surface and from objects in the water, and from frequency-selective propagation (seawater acts as a low-pass filter). Such information was lacking in the pool, due to its limited size and reflective walls (despite measures taken to reduce reflectivity).

The responses of the fish in the present study were probably dependent on the context in which the sounds were produced, and may not have been representative of the responses of sea bass in the wild. However, even in the wild, animals behave differently depending on parameters such as location, time of day, water temperature, and their past experiences, physiological state, age, body size, and school size. Therefore, the present study gives only a rough indication of the SPLs (or SELs or VEL_{ss}) to which sea bass at sea may show an initial response, and of the SPL below which initial

responses will probably not occur.

The school size probably had an influence on the responses of the fish in this study. One responsive fish may trigger a reaction in the other fish of a school, and conversely, fish may feel more secure in a school if the other fish are less responsive to sound. For the initial responses, only one responsive fish was needed for the school to be classed as responding. Bigger schools are more likely than smaller schools to contain at least one responsive individual.

4.2. The initial response threshold SEL_{ss} in the small and large sea bass

The 50% initial response threshold occurred at a mean SEL_{ss} of 131 dB re 1 μPa^2 s for small fish and 141 dB re 1 μPa^2 s for large fish. Thus a 10 dB difference existed in initial response threshold SEL between the two fish sizes: the small fish were acoustically more sensitive than the large fish. Like in the present study, Blaxter and Hoss (1981) also documented a difference in startle response sensitivity to 70–200 Hz signals between herring (*Clupea harengus*) of different sizes (test range 2.8–17 cm); the most sensitive fish were in the length range of 8–11 cm (i.e., in the middle of the length range they tested).

There are at least three possible explanations for differences in behavioral reaction between the two fish size groups in the present study:

1) The resonance frequency of the swim bladder of the small fish was more in tune with the frequency in the spectrum with most energy (600 Hz), and thus, compared to the large fish, the small fish experienced the pile driving sounds as being louder or as causing a stronger sensation. Among several parameters, the effect of sound depends on the size of the fish, because the size of the swim bladder determines its resonance frequency (Sand and Hawkins, 1973; Schaefer and Oliver, 1998). The size of the swim bladder depends not only on the species and size of the fish, but also on the depth at which a fish swims. However, it is unlikely that the resonance frequency played a role in the present study, because at 600 Hz (where most of the energy in the signal was produced), the wavelength was 2.5 m and thus too long to resonate by the swim bladders. Although the pile driving playback sound was broadband (Fig. 2), even at 20 kHz, the wave length was still 7.5 cm, and little energy occurred at that frequency.
2) In general, smaller fish have more potential predators than larger fish. Therefore, it is possible that they have to be more vigilant to avoid predation, and initial responses to sound resemble anti-predator responses (escape behavior).
3) The larger fish were approximately one year older than the small fish and were therefore more experienced with life in general, and had spent more time in the holding tanks. They may have been calmer than the smaller fish, and thus less likely to respond. The experience of the first author during 12 years of husbandry and research with several marine fish species is that larger fish in groups are generally less disturbed by stimuli (visual or acoustic) than smaller fish of the same species.

4.3. Recovery

Though they did show an initial response, the sea bass in the present study showed no sustained behavioral response to exposure to the pile driving sounds. Even at the highest mean received SEL_{ss} of 158 dB re 1 μPa^2 s, there was no statistical difference in mean school cohesion, which was predictive of the other sustained response behavioral parameters, during the pre-exposure, exposure, and post exposure periods. This suggests that the animals recovered quickly after their initial response.

A decrease in behavioral response over time during an exposure does not necessarily indicate that habituation (learning to stop responding to a stimulus which is no longer biologically relevant; Rankin et al., 2009) has taken place. A decrease in behavioral response may occur because:

1) animals hear selectively, filtering out repeated or irrelevant sound signals in the background (Rankin et al., 2009);
2) the sensitivity of the hearing organs is reduced by loud exposures (temporary hearing threshold shift; TTS). The cumulative SEL (SEL_{cum}) that is required to cause noise-induced TTS in sea bass due to impulsive sounds is unknown; or
3) animals suffer motor fatigue, and become unresponsive due to exhaustion (Domjan 2010).

It is important to determine the mechanism of recovery, since the different mechanisms have different ecological implications. In the present study, apparent recovery is clearly not due to motor fatigue, as the initial responses were so short-lived. The inter-pulse interval and signal durations were regular in the present study, so the fish may have become accustomed to the sound and been able to filter it out. Neo et al. (2014) showed that behavioral recovery in sea bass was faster after exposure to regular sounds than irregular sounds. By exposing sea bass to a tone after their exposure to impulsive sounds at levels similar to those used in the present study, Neo et al. (2016) showed that the reduced behavioral response was due to habituation (as the fish reacted to the tone to the same degree as they reacted to the start of the impulsive sound).

Radford et al. (2016) exposed sea bass to playbacks of pile driving sounds and seismic sounds. Naïve fish showed elevated ventilation rates, indicating heightened stress, in response to the impulsive sounds. However, fish exposed to playbacks of either pile-driving or seismic sounds for 12 weeks no longer responded with an elevated ventilation rate to the same sound type. Fish exposed long-term to playbacks of pile-driving sounds also no longer responded to short-term playbacks of seismic sound. The authors believed that the lessened response after repeated exposure was due to increased tolerance (habituation) or a shift in hearing threshold (temporary, TTS or permanent, PTS). Although the SEL_{ss} in the present study were relatively low, and a single impulsive sound may not have caused TTS, TTS may have occurred after exposure for 20 min (to 920 pile driving strike sounds). TTS occurs after long-duration exposure to relatively low-level pile driving sounds in harbor porpoises (*Phocoena phocoena*; Kastelein et al., 2016).

After the sound was switched on, depending on the received SEL_{ss}, the fish in the present study usually swam faster and changed direction to form more tightly cohesive schools. However, these changes only occurred for a very short time (less than 2 min) and were not apparent (relative to the pre-exposure behavior) when averaged over the 10 behavioral recordings of the 20 min exposure periods. These behavioral changes therefore constituted the initial response. Neo et al. (2014) also showed that sea bass dove deeper and swam in more cohesive schools after sound was switched on, but in their study the behavior of the sea bass returned to pre-exposure levels more gradually, perhaps because the sounds they used (300–1000 Hz noise bands) differed from those used in the present study (impulsive sounds).

4.4. Sound exposure guidelines for sea bass

During recent years, underwater sound has been of increasing

interest to governments (e.g. National Research Council, 2003) as they attempt to set standards for acceptable sound levels for marine animals.

Popper et al. (2014) proposed guidelines for safe levels of pile driving sound. Popper et al. (2014) place fish in three hearing categories: 1) fish without swim bladders (only reacting to particle motion), 2) fish with swim bladders not involved in hearing (mainly reacting to particle motion), and 3) fish with swim bladders involved in hearing (reacting to both particle motion and pressure). Sea bass probably fall between the two latter categories. For fish species with swim bladders not involved in hearing, guidelines are given only for the avoidance of mortal injury (SEL_{cum} = 210 dB re 1 μPa^2s or > 207 dB re 1μPa peak), recoverable injury (SEL_{cum} 203 dB re 1 μPa^2s or > 207 dB peak), and TTS (>SEL_{cum} 186 dB re 1 μPa^2s). These values are much higher than those found in the present study, which was focused on behavioral responses (and only short-lived initial responses were observed). For behavioral response criteria, SEL_{ss}, SPL, and VEL_{ss} are probably better units than SEL_{cum}; SEL_{cum} is more suitable for assessment of sounds causing injury and TTS. Trying to predict behavioral responses simply by using energy in a model is not realistic, as responses to sound depend not only on the received level, but also on a large number of other sound parameters, the context, and parameters relating to the animal.

Hawkins and Popper (2016) distinguish between short-term, transient changes, from which animals recover rapidly, and changes that have lasting effects. The initial responses observed in the present study are transient. If wild sea bass are exposed to pile driving sounds at the levels used in the present study, there are unlikely to be any adverse effects on their ecology.

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Appendix 7
Andersson et al (2011)

Offshore wind farms – ecological effects of noise and habitat alteration on fish

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2011

Offshore wind farms – ecological effects of noise and habitat alteration on fish
Doctoral dissertation 2011

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To my mother, Bittan Andersson (1949-2007),
for all support and encouragement

I miss you

ABSTRACT

There are large gaps in our understanding how fish populations are affected by the anthropogenic noise and the alteration of habitat caused by the construction and operation of offshore wind farms. These issues are of great importance as the construction of offshore wind farms will increase all over the world in the near future. This thesis studies these effects with a focus on fish. The wind turbine foundations function as artificial reefs and are colonized by invertebrates, algae and fish. The epibenthic assemblages are influenced by factors such as hydrographical parameters, time of submergence, distance to natural hard bottom, material and texture (PAPER I, II). Once an epibenthic assemblage has been developed, fish utilize it for different ecosystem services such as food, shelter, and spawning and nursery area. Benthic and semi-pelagic species show a stronger response to the introduced foundation than pelagic species, as it is the bottom habitat that has mainly been altered (PAPER I, II). Pelagic species could be positively affected by the increased food availability - but it takes time and the effect is local.

Construction noise like pile driving creates high levels of sound pressure and acoustic particle motion in the water and seabed. This noise induces behavioural reactions in cod (*Gadus morhua*) and sole (*Solea solea*). These reactions could occur up to tens of kilometres distance from the source (PAPER III). During power production, the wind turbines generate a broadband noise with a few dominating tones (PAPER IV, V), which are detectable by sound pressure sensitive fish at a distance of several kilometres even though intense shipping occurs in the area. Motion sensitive species will only detect the turbine noise at around a ten meter distance. Sound levels are only high enough to possibly cause a behavioural reaction within meters from a turbine (PAPER IV, V).

Keywords: *renewable energy, fish population, artificial reef, attraction vs. production, habitat structure, reef effect, FAD, bioacoustics, noise disturbance, fish behaviour, detection range, threshold, masking, fish communication and hearing.*

SVENSK SAMMANFATTNING

Inom de närmaste tjugo åren kommer tiotusentals nya vindkraftverk byggas i europeiska vatten för att öka den förnyelsebara energiproduktionen och minska utsläppen av koldioxid. Men det finns flera frågetecken om hur det marina livet påverkas av havsbaserad vindkraft då ny hårdbotten tillförs till området och ett nytt ekosystem bildas lokalt, men även på grund av att betydande ljudnivåer skapas under framför allt byggnationen men även under produktionsfasen. Denna avhandling behandlar effekterna av denna påverkan med fokus på fiskekosystemet.

Vindkraftverksfundament kan skilja sig åt i både storlek, material (stål eller betong) och konstruktion, men gemensamt är att de tillför ny hårdbotten till både den fria vattenmassan och botten. Många fiskar och ryggradslösa djur har frisimmande larver och dessa kommer att fångas upp av fundamenten och ett nytt ekosystem bildas på ytan och nedanför. Fastsittande filtrerande organismer som t.ex. musslor, havstulpaner, hydroider, sjöpungar och maskar etablerar sig relativt snabbt på de lediga ytorna. Fundamenten fungerar då som så kallade konstgjorda rev, även om de har ett annat huvudsyfte. Vilka arter som koloniserar de vertikala ytorna beror på vilken tid på året som de byggs eftersom olika organismer förökar sig under olika månader, vilken typ av botten som fundamenten byggs på och på materialets ytstruktur. Organismer som havstulpaner och rörbyggande havsborstmaskar fäster sig lättare på släta stålytor, medan hydroider och sjöpungar föredrar mera skrovliga betongytor (PAPPER I). Alger kommer också att kolonisera fundamenten men det tar lite längre tid då de växer långsammare (Papper I, II). Ekosystemet kommer att utvecklas över tiden och det först etablerade organismerna påverka vilka ytterligare djur och växter som kommer att kolonisera fundamenten. Artsammansättningen på fundamenten kommer att skilja sig från de naturliga hårdbottnarna och nya arter för området kan etablera sig, framförallt om fundamenten placeras på en mjukbotten (PAPPER I, II). Bland fiskar kommer bottenlevande arter att påverkas mest av att det byggs fundament i området eftersom det framförallt är deras livsmiljö som ändras (PAPPER I, II). Fiskar som föredrar hårdbotten kommer lokalt att öka i antal och det kan antingen bero på att de attraheras till det nybildade ekosystemen, men också på att nya individer tillkommer då fundamenten fungerar som lek- och uppväxtplats (PAPPER I, II). Fiskar som lever i det öppna vattnet kan lockas till det nybildade ekosystemet på och omkring fundamenten, eftersom det kan förse dem med mat och skydd. Påverkan är dock lokal och det tar tid att upptäcka någon effekt på det totala antalet fiskar i ett större område. Detta beror på att det finns en ganska stor naturlig variation i fiskdensitet och att det tar flera år för många fiskarter att bli könsmogna och få möjlighet att reproducera sig.

Det är främst under byggnationen av en park, vid pålningen av fundamenten, som riktigt höga ljudnivåer (både ljudtryck och partikelrörelse) kan uppstå, nivåer som har visat sig både döda och skada fisk men även störa viktiga biologiska funktioner som lek. De flesta fiskar hör bra och eftersom ljudet färdas väldigt snabbt och långt under vattnet blir det en storskalig påverkan. Fiskar som kan registrera ljudtryck, som t.ex. torsk, kommer att reagera på konstruktionsljud på flertalet kilometer ifrån en sådan aktivitet (PAPPER III). Fiskar som bara hör partikelrörelse, som t.ex. plattfisken tunga, kommer även att reagera på konstruktionsljud men eftersom det inte finns några mätningar av partikelrörelser vid pålning kan inga avstånd beräknas men avståndet är sannolikt kortare än för de övriga fiskarna (PAPPER III). Eftersom det finns skillnader mellan och inom arter vid vilka ljudnivåer de reagerar på ett ljud, kan man inte sätta ett enskilt tröskelvärde utan ett intervall är mera rimligt. Vindkraftverken bullrar inte bara under konstruktion utan även under drift. En ljudspridningsmodell baserad på mätningar i en vindkraftpark visar att ljudnivåerna inte är så höga att de är direkt skadliga men att de är hörbara på flera kilometers håll för de fiskar som registrerar ljudtryck, även om andra ljudkällor som fartyg finns i området (PAPPER V). Detta beror på att vindkraftverken producerar toner som skär igenom den befintliga ljudbilden. Inom ett par meter från fundamenten är ljudnivåerna så höga att det finns risk för att fiskarnas egen kommunikation överröstas eller att beteendet kan påverkas (PAPPER IV, V). Detta gäller även fiskar som bara registrerar partikelrörelse (PAPPER IV). Även om fiskarna kan vänja sig vid ljudet kan det finnas andra negativa konsekvenser av att leva i en bullrig miljö, som exempelvis stress, vilket vi idag vet väldigt lite om och detta tillsammans med vilken påverkan andra ljudkällor, som t.ex. båtar, har på fisk, måste studeras i framtiden.

LIST OF PAPERS

This thesis is based on the following papers, which are referred to in the text by their roman numerals:

I. Andersson, M. H., Berggren, B., Wilhelmsson, D., and Öhman, M. C. (**2009**). "Epibenthic colonization of concrete and steel pilings in a cold-temperate embayment: a field experiment" *Helgoland Marine Research*, **63**, 249–260.

II. Andersson, M. H., and Öhman, M. C. (**2010**). Fish and sessile assemblages associated with wind-turbine constructions in the Baltic Sea. *Marine and Freshwater Research*, **61**, 642–650.

III. Mueller-Blenkle, C., McGregor, P. K., Gill, A. B., Andersson, M. H., Metcalfe, J., Bendall, V., Sigray, P., Wood, D., and Thomsen, F. Pile-driving sound affects the behaviour of marine fish. Manuscript.

IV. Sigray, P., and Andersson, M. H. "Particle motion measured at an operational wind turbine in relation to hearing sensitivity in fish. Manuscript conditionally accepted for publication in the Journal of the Acoustical Society of America.

V. Andersson, M. H., Sigray, P., and Person, L. K. G. Wind farm noise influence on the audibility of fish. Manuscript.

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Main applicant (I, IV, V), planning the study and experimental design (I, II, IV, V), performing experiment or fieldwork (I-V), data analysis (performing I, II, V and participating III, IV) and writing the paper (main writer I, II, V and participating III, IV).

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1 INTRODUCTION

Almost all fish populations and their habitats over the world are affected by more than natural causes such as El Niño, since predation by humans in terms of intense fishing has been increasing for decades (Jackson *et al.*, 2001; Watson and Pauly, 2001; Hilborn *et al.*, 2003; Thursan *et al.*, 2010). In the last 100 years mankind has become the number one predator on most fish populations, limiting the amount of spawning biomass. Fishes are also affected by the increased anthropogenic nutrient enrichment (eutrophication) in the oceans altering food-web structures and resource availability as well as spawning and nursery habitats (Baden *et al.*, 1990; Vitousek *et al.*, 1997; Micheli, 1999). In addition, marine litter in the form of small plastic particles can be ingested by fish resulting in reduce food uptake, cause internal injury and death (Derraik, 2002; Gregory, 2009). Other activities such as exploration and extraction of oil and gas deposits, commercial shipping, offshore wind farms, military operations and boat tourism are all claiming rights to use the oceans for their purposes. These activities add noise to the ambient sound in the oceans affecting marine life (Ainslie *et al.*, 2009; Hildebrand, 2009; Kikuchi, 2010). In addition, ocean constructions destroy natural seabed and add new substrate in areas that often are lacking hard surfaces, and consequently introducing new species (Wilhelmsson *et al.*, 2006a; Brodin and Andersson, 2009; Wilson and Elliot, 2009). Thus, it is vital to understand the solitary as well as cumulative effect of these activities on the marine ecosystem, if we are to achieve a sustainable marine environment, enjoyable for future generations.

The use of renewable energy sources has increased and will increase over the next decades in the ambition to decrease carbon dioxide emissions and stop global warming (Krupp and Horn, 2008). However, the construction of renewable energy sources offshore alter local marine ecosystems (Boehlert and Gill, 2010; Wilhelmsson *et al.*, 2010). Out of wind, wave and tidal power, wind power is the only energy source commercially available today at a large scale. In Europe, the European Wind Energy Associations (EWEA) has set a goal of having 230 GW installed wind power capacity, including 40 GW offshore, by 2020 that is equivalent to 14-17% of EU's total electricity demand. By 2030 their estimation is 400 GW installed out of which 150 GW from offshore (EWEA, 2010). This is an ambitious goal given that 74 GW was installed in 2009 out of which only 2 GW comes from offshore wind power (EWEA, 2010). To reach their goal in 2020, 10 000 new offshore wind turbines (4 MW each) need to be built in coastal and offshore areas and another 22 000 (5 MW each) by 2030 occupying several hundred square kilometres of the coastal environment.

There are several benefits of placing wind power turbines offshore compared to onshore, such as usually higher wind potential (Bergström and Söderberg, 2008), less competition for space and minimal aesthetic influence (Taylor, 2004). Today most wind farms are built or applications are pending for building in shallow water areas (at 5 to 30 m depth) several kilometres from the coast, on offshore banks. These banks are often of high biological importance as feeding and spawning grounds for fish and supplying coastal areas with eggs and larvae of various marine organisms (Naturvårdsverket, 2006). Concerns over the potential impact from offshore wind power installations on biodiversity have been raised, including habitat loss, changed hydrological conditions, noise disturbance and increased emissions of electromagnetic fields (Gill, 2005; Zettler and Pollehne, 2006; Broström, 2008; Slabbekoorn *et al.*, 2010).

Notably, by adding artificial structures, i.e. offshore wind farms, to the seabed the ecosystem is locally altered and a new epibenthic assemblage is developed which could enhance fish densities. Whether this is a positive or negative effect can, however, be debated. When dealing with the impact on the marine environment it is important to consider the whole life cycle of the offshore wind farms (Gill, 2005). The main impact to the ecosystem occurs during the relatively short period of construction and then again during the described removal phase (no large wind farms have been removed yet). Noise from pile driving and boat activities as well as increased turbidity and destruction of habitat are a few of the described impacts (Wilhelmsson *et al.*, 2010). During the operational phase (about 20 years), noise and electromagnetic fields as well as impact on the fish ecosystem are of most concern (Ehrich

et al., 2006; Öhman *et al.,* 2007; Popper and Hastings, 2009; Slabbekoorn *et al.,* 2010). The uncertainty of the effect is mainly related to the large knowledge gaps, especially regarding activities generating noise associated with the construction and the operational phase. This status was acknowledged by HELCOM (Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area) and the EU Marine Strategy framework, who are working on defining and implementing indicators describing good environmental status of the Baltic Sea and other European seas - so far the limited knowledge in these areas make this work difficult (Tasker *et al.,* 2010).

Most studies from monitoring programs and surveys of the fish ecosystem around offshore wind farms are only published as grey reports to the contractors and rarely in any other form (but see Westerberg, 1994; Dong Energy *et al.,* 2006; Wilhelmsson *et al.,* 2006a). Nonetheless, results indicate that the foundations might function as artificial reefs with increasing food availability and shelter for some fish species. However, the timescale complicates the matter because there is a natural variation of the fish ecosystem over several years (Holbrook *et al.,* 1994; MacKenzie and Köster, 2004; Ehrich *et al.,* 2006).

1.1 The aim of this thesis

The aim of this thesis was to study how offshore wind power influence fish focusing on habitat and noise effects. The noise generated during the construction of wind farms, i.e. pile driving noise is tested for disturbance effects in terms of behavioural reactions in fish. Noise during the production phase is measured and zones of impact estimated and discussed. Additionally, the early recruitment of sessile organism and fish on the introduced foundations are studied. A specific aim was to incorporate experimental observations from the field in this work. Field trials were done in Sweden and Scotland.

Sunset over the wind farm Lillgrund, located in the Öresund strait between Sweden and Denmark. © Mathias H. Andersson.

2 ARTIFICIAL REEFS

Man-made constructions like wind farms in the coastal areas and open oceans can be viewed as artificial reefs, i.e. adding vertical hard substrate in an environment otherwise dominated by soft bottom and empty water even if this was not their original purpose (Svane and Petersen, 2001; Wilhelmsson *et al.,* 2006a; Wilson and Elliott, 2009). Three main techniques are used today to attach wind turbine foundations to the seabed; gravitation, monopile and jacket foundations (Nikolaos, 2004; Hammar *et al.,* 2010) (Fig. 1). Floating turbines exist as well, but only in demonstration projects, e.g. Hywind in Norway. The foundations all have different impacts on the ecosystem as they are constructed using different techniques and are of different size and material. However, these structures should not be regarded as surrogates for natural substrates since epibenthic assemblages on artificial surfaces were shown to differ compared to assemblages on natural hard substrates (Connell, 2001; Perkol-Finkel and Benayahu, 2007; Wilhelmsson and Malm, 2008). Further, there is a fundamental difference between commonly used artificial reefs, which have been thoroughly studied (reviewed in Baine, 2001), compared to large scale constructions such as oil-rigs, wind farms and bridge pillars since the latter penetrate the whole water column, adding hard substrate in an otherwise empty sea and also stand far apart.

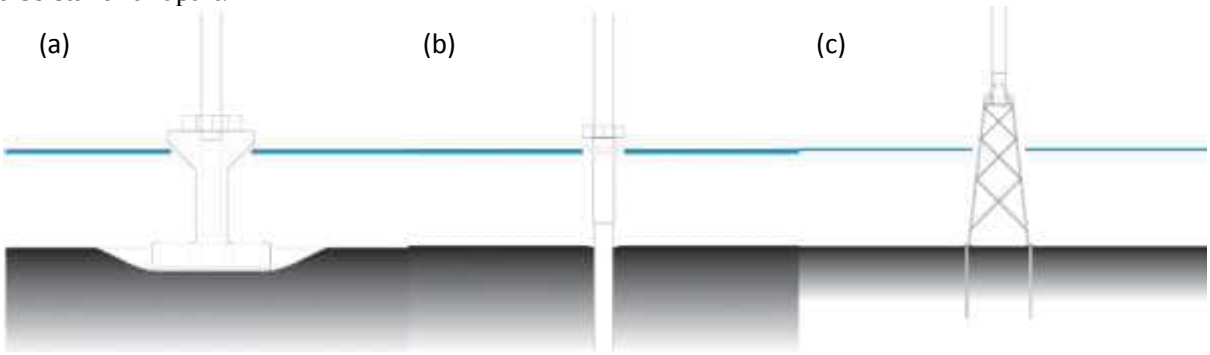


Figure 1. Illustrations of the three most common foundations used for offshore wind farms. (a) Concrete gravitation foundation, (b) steel monopile foundation and (c) steel jacket foundation. Illustrations modified from Hammar *et al.* (2010) with curtsy of Linus Hammar.

2.1 Epibenthic assemblage

Factors influencing the epibenthic invertebrate and algae assemblages on and around the artificial reef are salinity and temperature (Thorman, 1986), water movement (Guichard *et al.,* 2001), light availability (Glasby, 1999), depth (Relini, 1994), inclination of the surface and material and texture (Glasby, 2000; Somsueb *et al.,* 2001; Knott *et al.,* 2004; Becerra-Muñoz *et al.,* 2007). The initial development of macromolecule film and bacteria colonization created shortly after submergence either favours or deter larva from settling, which determines the on-following colonization (Wahl, 1989). In addition, time of submergence is of great importance in the beginning of the colonisation phase as different marine organism release their eggs and larvae during different times; these will compete for the available space on the artificial surface (Anderson and Underwood, 1994; Perkol-Finkel *et al.,* 2005).

As wind turbine foundations usually are located far away from the coast in areas previously lacking hard substrate in the water column and surface, they might function as refuges and stepping-stones for non-native species. Numerous species are transported all over the world on ships hulls and in ballast water tanks. These species could find new suitable habitats on these structures (Leppäkoski and Olenin, 2002). This has actually already happened when two new species were recorded at the wind farm Horns Rev in Denmark that previously had not been observed in Danish waters: the amphipods *Jassa marmorata* and *Caprella mutica* and the midge *Telmatogon japonicus* (Dong Energy *et al.,* 2006). The amphipods were found in high numbers on the foundation and were overall the most abundant species recorded. The same midge was also recorded at the wind farms Utgrunden and Yttre Stengrund in Sweden in the southern Baltic Sea in 2007 (Brodin and Andersson, 2009). The hypothesis is that these were transported to the area via ships.

2.2 Fish assemblage

Fish responds to several habitat characteristics like complexity, availability of food, shelter and hydrographical parameters such as water temperature and salinity (Connell and Jones, 1991; Magill and Sayer, 2002). The balance of these parameters is essential for the survival and reproduction of most fish species. Other important habitat properties include water depth, the substrate character and oxygen concentrations (Kramer, 1987; Phil and Wennhage, 2002). Substrate and sufficient oxygen concentrations are particularly important for the near-bottom fish species, as they are less mobile. In temperate regions water parameters change over the seasons and sometimes even between days. It is vital to understand the impact from these factors when predicting the effect of wind farms on fish ecosystems as they determine if a certain species of fish will be in the area or not. When estimating fish abundance several methods can be used, e.g. eco sounders (bottom or hull mounted), trawls, fyke and gill nets as well as visual estimations by divers (see Fig. 2). As they all work in different ways focusing on certain target species, different parts of the fish ecosystem will be sampled. Thus, care has to be taken when choosing sample method for estimation of fish abundance around offshore wind farms since different results might be obtained as a result of the chosen method (Andersson *et al.*, 2007a).

To understand fish population dynamics, the underlying processes have to be understood. Such processes are rates of birth (i.e. recruitment), immigration, emigration and death. For many fish species these factors form a complex web of demographic rates. Larval and juvenile stages mainly contain both a pelagic and a benthic phase, thus making it difficult to study the natural development of individual fish and populations (Caley *et al.*, 1996; Cushing, 1996). The dispersal of recruits plays an important role in establishing the origin of a population. The population can be described as "open" if it receives its new recruits from neighbouring or even distant populations, or as "closed" when the population primarily receives its new recruits from its own residents (Mora and Sale, 2002).

Several studies have reported high abundances of fish around and in the vicinity of artificial reefs (reviewed in Brickhill *et al.*, 2005). Two hypotheses have been proposed for the high densities: attraction and production (Bohnsack, 1989). The former suggests that fish is gathered around the artificial reef merely as a consequence of fish behaviour that is, fishes are more attracted to a structure compared to a barer featureless bottom. However, the fish density in the area as a whole will not increase, due to limitations in larval and food supply. The latter hypothesis states that the increase of fish is due to new production, possible when new substrate is added since it provides new habitat for settling, foraging and protection from predators (Bohnsack, 1989).

Figure 2. Different methods to sample fish around offshore wind farms. (a) A gillnet and (b) visual census used around Utgrunden wind farm in the Kalmar strait and in Gåsevik (**PAPER I, II**), (c) a fyke net used by the Swedish Department of Fisheries during the monitoring program of the wind farm Lillgrund in the Öresund strait. © Mathias H. Andersson

Studies from several different marine environments have had the ambition to evaluate the effectiveness of artificial reefs in fish habitat restorations (reviewed in Seaman 2007), without reaching consensus on the effectiveness in terms of new production of biomass (Powers *et al.*, 2003; Brickhill *et al.*, 2005). The overall conclusion is that the effect is dependent on the species and life stage of the fish. As it takes time for the new epibenthic invertebrate and fish assemblage to develop on an introduced structure such as offshore wind foundations, several years of monitoring is required to grasp the environmental impact. Species will come and go based on the level of disturbance occurring. More research is needed on the impact from offshore constructions to the ecosystem, which includes both continuously large-scale field monitoring of existing wind farms and experiments testing disturbance hypothesis and individual behaviour reactions.

3 UNDERWATER ACOUSTICS

Sound energy propagates through the water in terms of motion (displacement) of the fluids particles that induce longitudinal pressure changes. The rate of these pressure changes (f) is measured in cycles per second (Hz) and the speed (m/s) is related to the properties of the medium. In fresh water, sound travels (c) at about 1497 m/s at 25 °C and in sea-water (34 PSU) at a slightly higher speed of 1560 m/s due to the higher density. The wavelength (λ) of the sound is the spatial period of the wave i.e. the distance (in meter) over which the wave's shape repeats. The relationship between these factors is described by the equation

$$c = f\lambda.$$

As a result, high frequencies have short wavelengths and low frequencies have longer wavelengths. This is important to keep in mind when comparing studies performed in areas with different depth and water properties. Sound pressure level (SPL) is the difference in pressure between the average local pressure and the pressure in the sound wave. The pressure is measured in Pascal, but as there could be large differences in pressure the logarithmic scale of decibel (dB) was adopted to describe sound pressure. To convert pressure into decibel the following equation is used

$$SPL = 20\log({}^{P}/_{Pref}),$$

where P denotes the measured pressure and P_{ref} the reference pressure for the medium, in water 1 µPa. The displacement component (v) of the particle motion and sound pressure (P) can be calculated if the impedance (Z) of the medium is known, by using the following equation

$$v = Z/P.$$

However, even though the impedance can be calculated from the density of the medium it would only be applicable under certain conditions, e.g. in an acoustic free field with no reflecting boundaries and an unchanging sound speed in the water column; this is not a commonly found situation in the sea, except in deep oceans. Therefore, to be able to describe the sound field in the water both sound pressure and particle motion needs to be measured. The particle motion component of sound can be described by either displacement (m), particle velocity (m/s) or particle acceleration (m/s^2) as they are time derivatives of each other and therefore mathematically related. Close to a sound source (“near field”) and in shallow water, there is no analytical relation between pressure and motion due to the complexity in the acoustic field affected by the impedance and interference. Further away (“far field”) and in a free acoustic field the ratio between particle motion and sound pressure is constant and one can thus be derived from the other if the impedance is known. Sound pressure is measured by a hydrophone containing a piezoelectric material, converting pressure into volts. Particle motion is more difficult to measure, but can be calculated as described above or be numerically determined by the pressure gradients between two hydrophones. An alternative at hands is to employ accelerometers, which measures particle acceleration. An advantage with this choice is that the measurement gives information on the particle motion in three dimensions. Few commercial sensors are unfortunately available for field measurements.

A sound wave will lose energy as is expands from the sound source. Several factors influence the transmission loss (TL) of the sound energy. A complication is that transmission loss is frequency dependent. In a free acoustic field without any reflecting boundaries, the sound will decrease with 20·log (distance) (“spherical spreading”) as the energy is dispersed over a large area. In shallow water the bottom and water surface will reflect the sound, causing interference, the decrease is less: 10·log (distance) (“cylindrical spreading”). Another factor influencing the propagation in water is absorption, which increases with increasing frequencies and with increasing salinity. The effect of absorption is small on frequencies below 1 kHz. An approximate estimate shows that it reduces the sound level with less than 0.1 dB per kilometre in a saline environment. Source level (SL) is used to describe the sound

intensity at 1 m from the sound source. The source level is either estimated or measured. The received sound level (RL) at a distance (r) from a source can be calculated from the source level when the transmission loss is known by

$$RL(r) = SL(1m) - TL(r).$$

During construction and operation of offshore wind farms, noise is radiated into the water. The character and sound levels of operational noise will be descried in detailed in section 5.2.2, but below follows a short description of piling noise. Impact pile driving is the most common way to anchor a wind turbine foundation into the seabed. It can be large 3 to 6 m wide and 20 to 30 m long monopile foundations or smaller piles (less than 1 m wide) used when a jacket foundation is secured to the seabed. A hydraulic or diesel fuelled hammer hits the pile repeatedly to drive it into the seabed. The single acoustic pulse created during impact is between 50 and 100 ms in duration with app. 30 - 60 beats per minute. It usually takes several hours to drive one pile into the bottom. This activity creates high levels of sound pressure and acoustic particle motion that are transferred through the pile into the water and seabed. Noise is radiated from the pile itself, but it could also radiate back from the seabed into the water column. The sound from pile driving is transient and discontinuous, to be compared with the more broadband and continuous sound from an operational wind farm. Several acoustic measurements of sound pressure during piling have been performed, showing source levels of over 180 dB re $1\mu Pa_{(peak)}$ at 1 m (Madsen *et al.*, 2006; Betke *et al.*, 2004; Betke, 2008; Erbe, 2009). However, there are no published studies on levels of particle motion during a pile driving operation. Most of the piling pulse energy is below 1 kHz, overlapping with frequencies where fish both receive and produce sound. There is a continuous discussion among scientist in what unit pile driving noise and similar transients (e.g. air-gun noise) should be expressed. The two most common ways are sound pressure level (SPL) (expressed in dB re $1\mu Pa_{peak}$) showing the maximum pressure within the pulse and cumulative sound expose level (SEL) (expressed in dB re $1\mu Pa^2 \cdot s$) which sums up the energy of all pulses over a certain time window (Southall *et al,.* 2007).

Today, there is no long-term monitoring of ambient sound available to science in any European country. Measuring sound in the oceans at different locations and during different times of the year, both natural and anthropogenic, is important if we are to understand our impact on the ocean. (See Fig. 3 for different systems used to measure underwater noise). The term "soundscape" has been adapted to describe the sound in the terrestrial environment and this applies as well to the underwater environment as it is full of sound that is used in biological interactions and for marine organisms to orient themselves in the water. This will be described further in the next chapter.

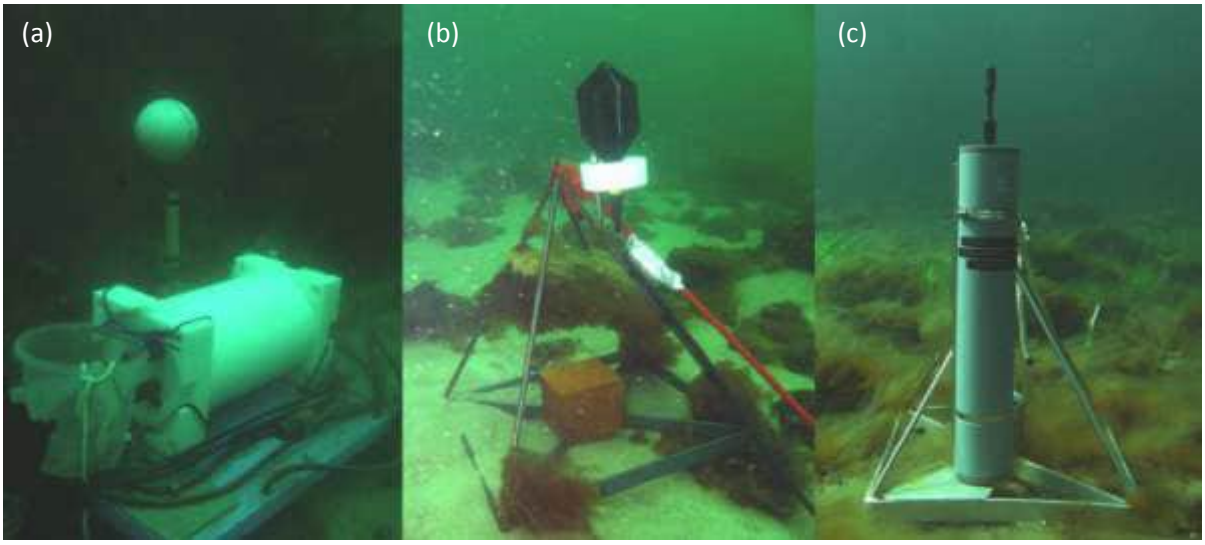


Figure 3. Acoustic sensors used in the studies. (a) Particle motion sensor developed and used in **PAPER IV**, (b) Brüel & Kjær 8101 hydrophone and (c) DSG-ocean hydrophone used in **PAPER V**. © Mathias H. Andersson.

4 FISH BIOACOUSTICS

4.1 Sound and hearing

There are a lot of biological sounds in the sea. Fish uses sound in various behavioural interactions such as finding prey, scare away competitors or to be aware of an approaching predator. Many species produces sound using muscles around their swim bladder or by stridulating teeth or fin rays to attract a mate or during spawning (Bass and Ladich, 2008; Kasuman, 2008). Additionally, sound also gives information about abiotic conditions like currents and winds as well as the location of coastlines and reefs and are used for orientation by fishes (Lagardère *et al.*, 1994; Tolimieri *et al.*, 2000). This auditory scene extends much further than the visual scene that could be limited by low visibility, and provides fish with an overall very broad view of their world. One of the earliest records of an observation of sound produced by fish was given by Aristotle's (350 B.C.E) in Historia Animalium where he stated "*Fishes can produce no voice, for they have no lungs, nor windpipe and pharynx; but they emit certain inarticulate sounds and squeaks*". How fish detects sound was not really shown until the beginning of the 20th century when G.H. Parker (1903) was one of the first to demonstrate that fish can detect sound. However, it was not until the mid 1960 and early 1970 that the field of fish bioacoustics started. Today it is an interdisciplinary field that combines biology, psychology, physics and mathematics. Even though research on fish hearing has been performed for more than 50 years, there are still large knowledge gaps in our understanding of hearing mechanism and sound production and its relevance to behaviour (Popper and Fay, 2010). There are up-to-date 31 900 species of fish and an unknown number of species not yet known to science (Froese and Pauly, 2010). Out of the ones we do know about, only a small fraction has been studied in terms of their abilities to detect sound pressure and motion. However, it is clear that all teleost fish have inner ears, equipped to detect motion, and some species having a swim bladder can detect sound pressure. Additionally, specialization to increase sound pressure sensitivity even further seems to have evolved simultaneously, in different fish families (Ladich and Popper, 2004).

As mentioned earlier, all teleost fish has two inner ears that consist of three semicircular canals, each oriented perpendicularly to each other with a sensory region at the base (Popper *et al.*, 2003) (Fig. 4). The sensory region contains three otolith organs (the sacculus, lagena, and utriculus), each containing a calcareous otolith mechanically connected to a sensory epithelium (maculae) by a thin membrane. Sensory hair cells are embedded in the epithelium and register the relative movement between the otolith and the epithelium. This movement is caused by the difference in density of the otolith and the epithelium resulting in a shear movement at different amplitudes and phases. This mechanical stimulation of the hair cells induces a signal that stimulates the nervous system. The otolith organs have two functions; determining the head's position (relative to gravity) and sound detection. It is the particle motion component of the sound that stimulates the otoliths, making them behave as simple harmonic oscillators (de Vries, 1950). Studies have shown that out of particle displacement, velocity and acceleration, the last is the component used in sound detection by the otoliths (Hawkins, 1993; Fay and Edds-Walton, 1997; Sand and Karlsen, 2000).

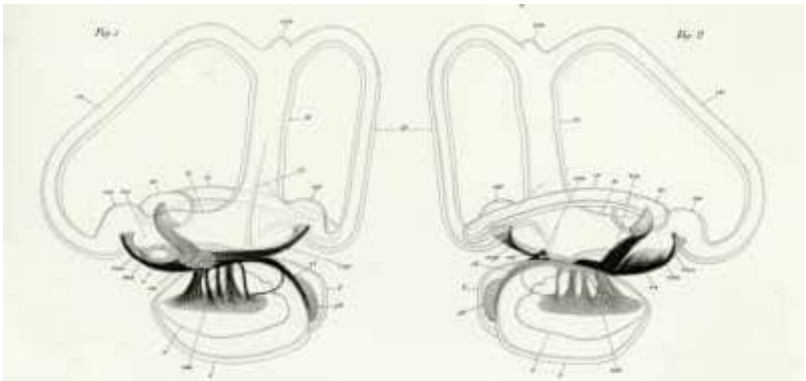


Figure 4. Illustration of the inner ears of salmon (*Salmo salar*) made by Gustaf Retzius (1881). The three semicircular canals are seen oriented perpendicularly to each other with otoliths at the base. This scanned copy of the original illustration was kindly supplied by Arthur N. Popper.

For detection of sound pressure, the fish must have a swim bladder or other gas-filled chamber, (usually found in the abdominal cavity), which can convert the pressure into motion and be detected by the otolith. There is a considerable variation in size, shape and location of the swim bladder between species as well as different specialisations to enhance the transfer of pressure into motion. The most studied enhancement is the Weberian ossicles, which are small bones connecting the swim bladder to the saccule otolith found in fish's belonging to the superorder Ostariophysi, e.g. carp (*Cyprinus carpio*), goldfish (*Carassius auratus*) and roach (*Rutilus rutilus*). This specialisation has led to sensitivity from a few Hz up to several kHz with a sound pressure threshold of around 60 dB re 1 µPa (Fig. 3). Clupeiform fishes, e.g. herring (*Clupea harengus*), sprat (*Sprattus sprattus*) and sardine (*Sardina pilchardus*) have a small gas bubble tied closely to the utricle otolith, called prootic auditory bulla, enhancing their hearing abilities up to 3-4 kHz. However, a few species within the genus *Alosa* like the American shad (*Alosa sapidissima*) was shown to be able to detect sound up to 180 kHz (Mann *et al.*, 2001). Species that have a swim bladder, but lack any specialized morphologic structure to enhance their hearing sensitivity, e.g. cod (*Gadus morhua*), salmon (*Salmo salar*) or the European eel (*Anguilla anguilla*), are limited in sensitivity below 1 kHz and a sound pressure threshold between 75-100 dB re 1 µPa.

To summarize, the ability to detect sound pressure relies on the presence of a gas filled cavity that transforms pressure into motion. If there is a morphological structure connecting this cavity to the inner ear, higher sensitivity in terms of frequency and lower sound pressure threshold is achieved. This is exemplified in Fig. 5, where goldfish and herring show a low threshold and wider frequency sensitivity compared to salmon and eel. However, in those studies where the swim bladder was deflated no reduction in bandwidth sensitivity was noticed, only a decrease in sound pressure level (Offutt, 1974; Fletcher and Crawford, 2001). Realising that aquarium constitutes a complex acoustic environment, where the fish often is located close to a sound source in acoustical experiments, care has to be taken when interpreting results, especially when sound pressure and particle motion are not measured simultaneously (Craven *et al.*, 2009). The fish might have been responding to the particle motion and not the induced sound pressure level. This makes many published audiograms of hearing thresholds in fish questionable, as there is often a relative large discrepancy in hearing thresholds between studies of the same species (Popper and Fay, 2010).

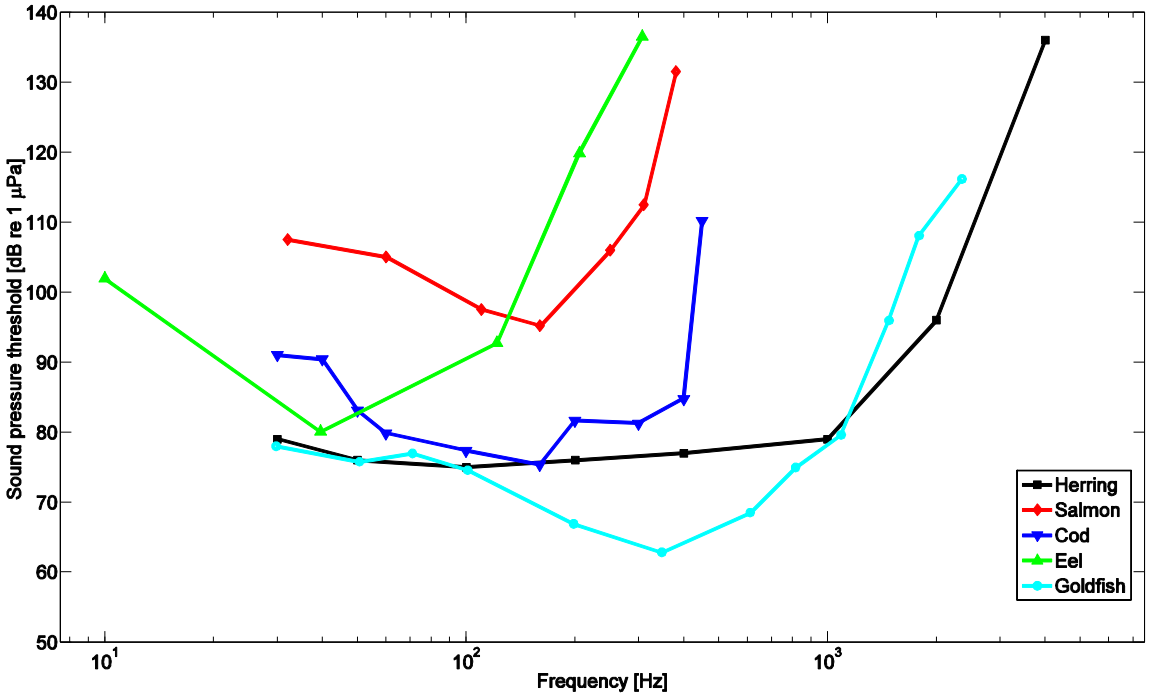


Figure 5. Audiograms of several pressure sensitive species redrawn from published studies. Herring (● Enger, 1967), salmon (● Hawkins and Johnston, 1978), cod (● Chapman and Hawkins, 1973), European eel (● Jerkø *et al.*, 1989) and goldfish (● Fay, 1969).

Species without a swim bladder like benthic species (e.g. flatfishes, gobies and sculpins) and fast swimming pelagic species (e.g. tuna and mackerels) are only sensitive to particle motion (Sand and Karlsen, 2000). There is a relative similar sensitivity between species; of between 10^{-4} to 10^{-5} m/s^2 ranging from less than1 Hz to about 300-400 Hz where after the sensitivity decreases rapidly (Enger *et al.*, 1993; Horodysky *et al.*, 2008). Both cod and plaice (*Pleuronectes platessa*) have been shown to be sensitive to frequencies as low as 0.1 Hz (Fig. 6). The discrepancy between the two audiograms of cod for 30 Hz, in Fig. 6, could be linked to difference in ambient noise level during the experiments as suggested by Sand and Karlsen (1986). Few species have been tested in terms of sensitivity to particle motion (Popper and Fay, 2010).

The dual sensitivity to sound pressure and particle motion in some species has not yet been explained in detail, but Chapman and Hawkins (1973) demonstrated in a field experiment measuring the hearing threshold for cod at different distances from a sound source that particle motion was the acoustic stimulus below 50 Hz and sound pressure above 50 Hz. Close to a sound source there is a steeper gradient in particle motion compared to sound pressure and the fish might use this gradient to discriminate between pressure and motion. A directionality hearing capability has been demonstrated in cod, improving sound detection (Chapman and Hawkins, 1973; Schuijf, 1975; Buwalda *et al.*, 1983). It seems that fish can use their sound detection ability in different ways depending on the stimulus. It can be speculated that their brain synthesizes the different signals to create a larger and complex picture.

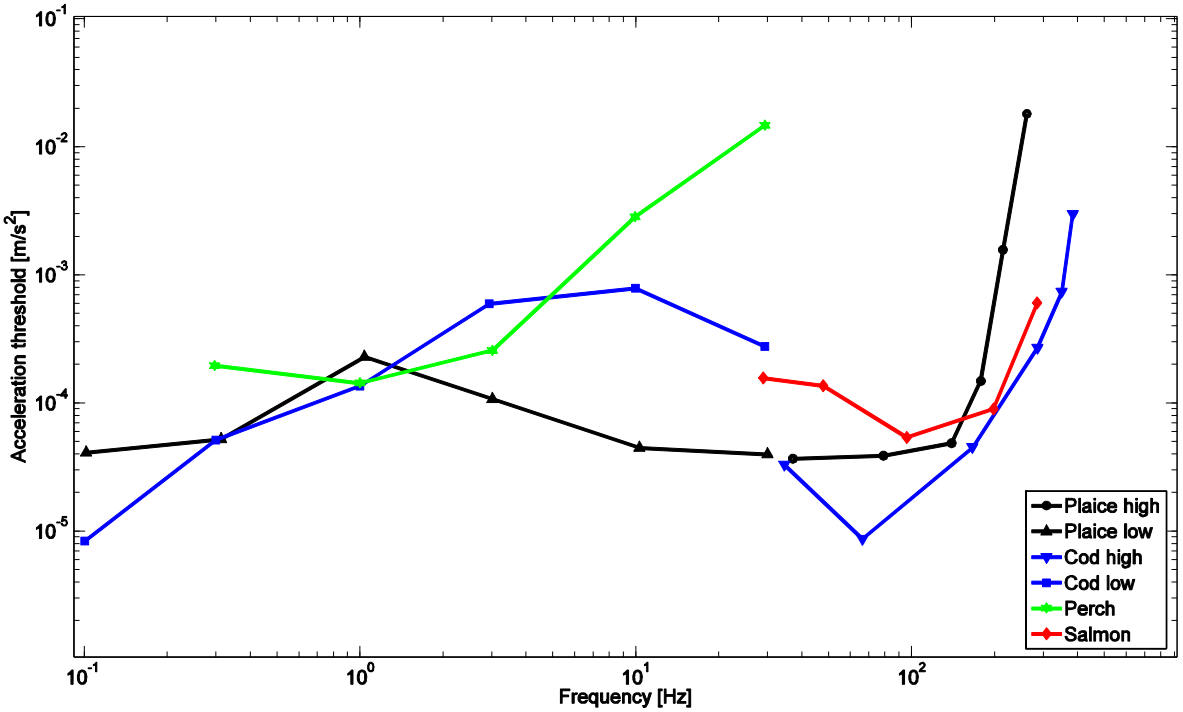


Figure 6. Audiograms for several motion sensitive species redrawn from earlier studies. Plaice (● low <20 Hz, Karlsen, 1992a), plaice (● high >20 Hz, Chapman and Sand, 1974), perch (● Karlsen, 1992b), cod (● low <20 Hz, Sand and Karlsen, 1986), cod (● high >20 Hz, Chapman and Hawkins, 1973) and salmon (● Hawkins and Johnston, 1978).

4.2 Lateral line organ

Fishes can also detect motion in water is through the lateral line organ. This organ consists of several hundred or thousands neuromasts spread over the fish body. There are two types of neuromasts; canal neuromasts located within canals on the head and trunk, and superficial neuromasts that can occur in clusters or alone. The neuromasts are in direct contact with either the water or the canal fluids. Each neuromast has a cylindrical gelatinous cupola where sensory hair cells are embedded creating a mechanical coupling between the motions in the water or fluid and the sensory hair cells, similar to the otolith organs in the inner ear (Webb *et al.*, 2008). The neuromasts can register frequencies less than 1

Hz up to about 150 Hz and encode the duration, local direction, amplitude and phase of the hydrodynamic motion, resulting in a local pressure gradients over the body. Displacements of less than 1 nm are sufficient to cause a neural stimulation of the hair cells (Münz, 1989). The lateral line system is used for prey detection and predator avoidance in the near-field (up to a few body-lengths) as well as to help the fish to form a three-dimensional image of their local environment (Bleckmann, 2004). The limitation in detection distance of the lateral line and its role in hearing were shown by Karlsen and Sand (1987) and Karlsen (1992b) where acceleration thresholds of the inner ear were not affected when the lateral line system was blocked by the use of Co^{2+}, suggesting a limited role of the lateral line in far-field detection. This is most likely true for pelagic fishes but not for benthic species like sculpins and flatfish that lie directly on the seabed. A difference is that the sound can propagate through the seabed as well as the water and thereby increase the acoustic stimuli (Whang and Jansson, 1994). Braun and Coombs (2000) demonstrated an approximately equal detection range for the inner ear and the lateral line in prey detection in the mottled sculpin (*Cottus bairdi*). The diversity in morphologic structure of the lateral line organ is large and unique specializations to increase sensitivity exis. One example of this is the mechanical coupling (laterophysic connection) between the anterior part of the swim bladder and the lateral line in the skull of the genus *Chaetodon* (butterfly fishes) (Webb, 1998) thus significantly expanding the functional range of the mechanosensory lateral line system.

4.3 Sound localization

The ability to localize sound sources was demonstrated in fish with and without a swim bladder–inner ear connection (Chapman and Hawkins 1973; Schuijf and Buwalda, 1980). Cod was able to distinguish pure tones emitted alternately from two aligned sound projectors positioned at different distances, suggesting three-dimensional hearing capabilities (Schuijf and Hawkins, 1983). This ability is thought to be attributed to the inner ear as the sensory hairs cells are organized into different orientation groups where each hair cell has one tall kinocilium located on one side followed by a subsequent row of more stiff stereovillis, from the tallest to the shortest. The mechanical stimulation of hair cells from the otolith creates a polarization over the surface and a directional sensitivity is achieved (Hudspeth and Corey, 1977).

Several studies investigated the directional sensitivity by replaying sound to fish at different angles and elevations (Chapman and Johnstone, 1974; Hawkins and Sand, 1977). However, the mechanism behind this ability is not yet known. As described earlier, the fish inner ear registers the directional particle motion of a sound wave. Notably, the fish should not be able to determine the direction of the sound based on particle motion as there is a 180 degrees ambiguity. There are some suggested theories to explain this ability, e.g. the phase model where the fish use the phase relation between the swim bladder and the inner ear to decide the direction (Schuijf, 1975). Kalmijn (1997) suggested that the fish swim in the direction of the particle motion, sensing the gradient. More recent studies, e.g. Rollo *et al.* 2007 and Zeddis *et al.* (2010), showed that fish adopt relatively quickly an orientation towards the sound's particle motion axis (if it is attracted to the sound). It is not only the inner ear that is used for sound localization as the lateral line also detects motion. The spatially distributed neuromasts of the lateral line system are better suited than the otolith organs to detect the gradient in motion in the near field as there will be a difference in fluid pressure between the canal pores within the canal segments along the body. As a consequence the lateral line will provide a greater spatial resolution of the acoustic field than the inner ear (Braun and Coombs, 2000) but only very close to the source. There are still many gaps in our understanding of how fish are able to locate a source. Could it be that the two systems, lateral line and otolith organs, are combined into one ability? Further, adding visual and olfactory cues would increase the environmental awareness even more.

4.4 Effects of anthropogenic noise on fish

Richardson (1995), described that, an animal's reaction to noise can be divided into zones of influence. This is a noise impact assessment commonly used for marine mammals, but it could also be applied to fish as it experiences the same range of effects (although the distances of each zone will be different). The author describes four zones representing areas where different disturbance effects or injuries could occur. These are; zone of hearing loss, injury or discomfort, zone of masking, zone of

responsiveness and zone of audibility, defined from the sound source and outwards. These zones have not any distinct borders and are species dependent.

4.4.1 Zone of hearing loss, injury or discomfort

When induced noise by humans in the sea becomes loud enough, fish are killed or sustain temporal (temporal threshold shift, TTS) or permanent (permanent threshold shift, PTS) hearing loss. This is because high intensity sounds like explosive blasts, impact pile driving or air-guns, can damage internal organs leading to death or damage of the sensory hair cells in the otolith organs (reviewed in Popper and Hastings, 2009). Unlike many other animals' fish adds hair cells to the inner ears through their life and also after being damaged by sound, as observed in goldfish by Smith *et al.* (2006). However, the result has only been replicated a few times and a contradictory result where no regeneration of hair cells was observed by McCauley and colleges (2003). More studies are therefore needed not only due to the contradictory results, but also due to the great diversity in fish ear morphology and physiology. If the hearing loss is only temporal, the fish will recover within hours or days (Amoser and Ladich, 2003). The recovery time depends on both duration and the frequency of the noise (Scholik and Yan, 2001). High enough levels to cause physical damage are thought to occur only relatively close to a pile driving operation or close to airguns in a seismic survey (Popper and Hastings, 2009). However, during the recovery time of the TTS the fish might be exposed to higher predation or be inhibited to perform biologically important activities.

4.4.2 Zone of masking

A fish will detect a signal if it is above ambient noise in terms of strength and within the hearing range. Farther away from a high intensity noise source or closer to a moderate source such as operating wind farm noise and shipping noise, masking effects on fish communication and other signals such as prey sounds or abiotic sounds could occur. The induced noise raises the ambient level making the detection of sound more difficult as the signal-to-noise ratio decreases leading to a reduction in signal detection distance. This occurs only if there is an overlap in frequencies between the induced noise and the sound of interest. For example, boat noise was observed to mask communication of several species of fish (Vasconcelos *et al.,* 2007; Codarin *et al.,* 2009). Fish has auditory filters covering several frequencies, called the critical bandwidth, making an average sound level over that bandwidth. The critical bandwidth was determined for goldfish (Enger, 1973) and cod (Hawkins and Chapman, 1975) and similar functions were demonstrated in other vertebrates (Fay, 1988). This makes it easier for the fish to detect a narrowband signal in an acoustic environment characterized by broadband noise, which is the normal acoustical state of the sea. In a comparison between anthropogenic noise and hearing in marine animals, averaging is necessary and often 1/3-octave is used when integrating over bandwidths (Wahlberg and Westerberg, 2005, Madsen *et al.,* 2006). Fish produces sound during courtship behaviour (Hawkins and Amorim, 2000), when feeding (Amorim *et al.,* 2004) and in antagonistic interaction (Vester *et al.,* 2004). Disturbances to these interactions could have severe implications on both individual and population level (Slabberkoorn *et al.,* 2010). It should be underlined that several species, e.g. cod (Brawn, 1961) and the plainfin midshipman (Brantley *et al.,* 1994) relies on acoustic signalling during courtship. A skewed sexual selection compared to the natural situation might be the result if the acoustic signalling becomes less important as size of drumming muscles and reproduction success is correlated (Rowe and Hutchings, 2004; Rowe *et al.,* 2008).

4.4.3 Zone of responsiveness

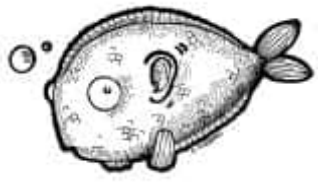
Farther away from a sound source fish might be disturbed by the noise resulting in a behaviour or physiological reaction. Behavioural responses can range from startle and avoidance responses to more subtle reactions such as changes in swimming activity, vertical distribution and schooling behaviour. Studies by Engås *et al*. (1996) and Engås and Løkkeborg (2002) reported a significant decline in catch rate in cod and haddock (*Melanogrammus aeglefinus*) after a seismic survey. This lasted several days after sound exposure was stopped. Further, new fish-survey and research vessels are being built or rebuilt to minimize the engine- and propeller-generated noise in order to minimize behavioural effects on fish (Skaret *et al.,* 2006; De Robertis *et al.,* 2010). Further, there are international standards for underwater-noise emission by research vessels issued by ICES (International Council for the

Exploration of the Sea) (Mitson, 1995). The response in fish to a noise disturbance is related to their habitat preference as pelagic species are more likely to swim away while benthic species will stay to a higher degree (Wardle *et al.*, 2001; Løkkeborg *et al.*, 2011). Habituation (decreased response to repeated stimuli) or sensitisation (increased response to repeated stimuli) to the noise could occur and are a temporal change in an animal's individual tolerance (Bejder *et al.*, 2009). Thus, the alternative of staying or leaving a noisy area will depend on the individual's tolerance to a disturbance or if the animal has enough energy to change habitat (Nisbet, 2000; Beale and Monaghan, 2004). In addition, the area might be too important to leave if the habitat is vital for its survival in terms of feeding, spawning or shelter (Bejder *et al.*, 2009). Startle responses was noticed when fish were subjected to a sound stimulus in tanks (Andersson *et al.*, 2007b; Kastelein *et al.*, 2008) and in the sea (Wardle *et al.*, 2001). The startle response is seen by a "C-start", that is the primary behaviour used by fishes to avoid an attacking predator. During a C-start the fish rapidly turns away from the stimulus into a "C" shaped body bend, followed by a powerful tail stroke to the opposite side of the body which moves the fish away from the threat (Eaton *et al.*, 1977). It will be costly for the fish to respond in this way and could have negative effects on survival in a longer perspective.

4.4.4 Zone of audibility

The zone of audibility is linked to the individual species' hearing threshold and sensitivity. Masking is overcome when the signal-to-noise ratio is high enough for a fish to sense the sound, while if the ambient sound from wind, waves, rain and biological noise are higher than the induced anthropogenic noise, the fish will not hear it. As fish can detect a narrowband signal in broadband noise, the induced noise does not need to be higher over the whole bandwidth for it to be heard by the fish. Wind and waves adds considerable sound below 500 Hz and below 10 Hz the turbulence from waves in shallow water dominates the spectrum (Hildebrand, 2009). Most fish will detect sound below 1000 Hz and a few species up to several kHz as described earlier. Many human generated noise sources such as shipping, wind farms and pile driving generates sound below 1000 Hz, which fish can hear. If a fish remain in an area exposed to noise levels above hearing threshold, but not at a level that triggers a behavioural response, other indirect effects might occur. Noise was shown to induce higher levels of the stress hormone cortisol in fish when exposed to noise (Wysocki *et al.*, 2006), which could disrupt growth, maturation and reproductive success (Pickering, 1993; Small, 2004). A combination of several stressors on the fish ecosystem such as eutrophication and overfishing might together with noise trigger a response even if the noise alone is not high enough to act as a stressor (Deak, 2007; Wright *et al.*, 2007).

Even though numerous studies are published showing effects of noise on fish, there are knowledge gaps in our understanding of the effects of noise on fish especially in terms of behaviour and masking effects. Few studies have been conducted probably due to the difficulties in reproducing a natural acoustic environment in tanks and aquariums. The results of experiments in such conditions cannot be easily applied to the natural environment in the sea (Wysocki *et al.*, 2007; Craven *et al.*, 2009). One has to be careful when extrapolating between fish species due to the fact that even closely related species might have different hearing abilities and react to a noise stimulus in different ways and we do not know how age and sex affects hearing abilities. Moreover, one must also be cautious with any attempt to extrapolate results between different sources of noise because the characteristics of the sources (e.g. air guns, ships, pile driving, and wind farms) differ significantly from one another in terms of duration and spectral intensity.



5 CONCLUSIONS AND DISCUSSIONS OF REULTS

We have increased our ocean activities over the last decades in terms of constructions, shipping, oil and gas exploration and extraction, as well as fisheries. It is vital to scrutinize their influence on the environment if we want to hand over a living sea enjoyable for future generations. Natural science has not been able to keep up with technical advances such as the development of offshore wind farms and as a result, the impact on the marine ecosystem is not yet fully known. There are areas where the scientific knowledge is too scarce (e.g. noise disturbance and reef effect) but fortunately we have a better understanding in some other areas (Wilhelmsson *et al.,* 2010; Slabbekoorn *et al.,* 2010).

This thesis will add new results and support earlier conclusion on the effects of offshore wind farms on the marine environment with a focus on fish and to some extent the invertebrate and algae assemblages' colonization of the foundations. Further, this thesis describes behavioural reactions of fish from pile driving noise, studies the underwater noise emitted during the operational phase (both particle motion and sound pressure) and discussed possible effects on fish.

5.1 Artificial reefs

5.1.1 Epibenthic assemblage

Wind farm foundations are made of either concrete or steel and could be of different sizes and shape such as gravitation foundation, monopile or jacket. The aim of **PAPER I** was therefore to experimentally test the importance of material (steel and concrete) during the initial (one year) colonization of vertical structures. This study was followed by **PAPER II** that studies the fish and epibenthic assemblage on operational wind turbine foundations, seven years after construction. Although there are differences between the offshore wind turbine foundations used today the common factor they all share is that they add hard substrate to the water column previously occupied only by water and to the seabed. The structures change both large-scale water movement in the wind farm area (Broström, 2008) and create local turbulence and fluctuating water velocity around the cylindrical structure and protruding parts (Guichard *et al.,* 2001). The foundations presence in the water column increases the likelihood that fish and invertebrate larvae will encounter a suitable habitat for settlement (Neira, 2005). Time of submergence as well as distance to natural reefs will determine who the first colonizer will be as larval supply is linked to season and hydrological conditions (Connell, 2001; Anderson and Underwood, 1994; **PAPER I**). The foundation's surface material and heterogeneity will also influence the earlier colonizers of the surface as boundary layer flows are important factors for settling organism like for hydroids and algae that are more attracted to a rough concrete surface while species like barnacles and tube worms glue themselves more easily onto the smother steel surface (Koehl, 2007; **PAPER I**, **II**). The presence of resident adults plays also an important role in facilitating colonization or inhibiting new arrivals (Dean and Hurd, 1980; **PAPER I**). This was exemplified in **PAPER I** where the tunicate *Ciona intestinalis* became a dominate organism on several pillars, inhibiting further colonization of the substrata. Filtering organisms located high up on the vertical foundation have an advantage compared to those at the seabed in terms of low sedimentation rate and a continuous supply of food, carried by the surrounding waters (Wilhelmsson and Malm, 2008; Maar *et al.,* 2009; **PAPER I**, **II**)(see examples of organisms in Fig. 7a). Large colonies of blue mussels (*Mytilus* spp.) have been noticed around the base of offshore foundations in the Baltic Sea and are thought to be the result of dislodgement of mussels from the vertical foundation, creating beneficial habits for fish and mobile invertebrates (Wilhelmsson *et al.,* 2006a; Maar *et al.,* 2009; **PAPER II**). The effect from the introduced foundation on the benthic assemblage is only local as already at 20 m distance the assemblage is similar to natural once (Wilhelmsson *et al.,* 2006a; Maar *et al.,* 2009; **PAPER II**). Blue mussels changes the local environment by excretion of ammonium, which can be used by fast growing macroalgae species such as filamentous red algae (Norling and Kaustsky, 2007; Maar *et al.,* 2009). This was, however, not noticed by Wilhelmsson *et al.* (2006a) as the coverage of red algae was positive correlated with the distance from the foundation. Somewhat higher coverage of red algae was noticed on the foundation in **PAPER II** compared to Wilhelmsson *et al.* (2006a) four years earlier. Red algae are slower colonizers than mussels and in later stage of

succession, red algae may increase as seen on a nearby a lighthouse (50 years) (**PAPER II**) and bridge foundations (6-16 years) (Qvarfordt *et al.,* 2006) and other wind farms (Dong Energy *et al.*, 2006).

Nutrients in the water are trapped by the assemblage high up on the foundations and are later transported downward into the seabed below as organic debris in the form of live mussels and faecal matter. This may result in local areas of anoxia where oxygen is used up in the degradation process, as was found by Zettler and Pollehne (2006) in their field experiment. The same negative impact was also noticed (by the author of this thesis) in the wind farm area the year before the study in **PAPER II**, where a band (30 cm wide) of a sulphide oxidising bacteria (*Beggiatoa* sp.) were encircling the base of the wind turbine foundations. Why this was not found during the study in Paper II is probably due to the usually good water circulation of the area. The impact on the soft bottom community is otherwise low at some distance away from the construction (Wilhelmsson *et al.,* 2006a; Maar *et al.,* 2009; **PAPER II**). The epibenthic invertebrate and algae assemblages on the foundations will continue to develop over the years, but will not likely resemble natural hard bottom communities as there is a difference in age and structural complexity (Connell, 2001, Perkol-Finkel and Benayahu, 2007; Wilhelmsson and Malm, 2008; **PAPER I**, **II**).

The introduction of hard substrate may be considered negative in valuable areas without any natural occurrence of hard substratum as the consequence will be an increased level of biological diversity with species not previously present in the area (Dong Energy *et al.*, 2006, Wilhelmsson and Malm, 2008; Brodin and Andersson, 2009; **PAPER I**). On the other hand, increased biodiversity is sometimes regarded as positive, creating a favourable habitat for fish and mobile invertebrates. If the foundations are located in a hard bottom area, the effect will be much smaller compared to a soft bottom area. Around the base of the foundations, rock or gravel is often added as scour protection creating even more of a complex environment. This adds up to 2.5 times more new hard surface to the area then the destroyed natural bottom (Wilson and Elliott, 2009). Synthetic fronds may also be laid out as scour protection creating a complex habitat for fish and other organism. Foundations could also be modified to facilitate the reef effect for fish and crustaceans as seen for wave energy foundations and restoration of reefs (Sherman *et al.,* 2002; Langhamer and Wilhelmsson, 2009). However, the added new hard substrate habitat is relative small compare to the whole wind farm area. At the wind farm Nysted in Denmark, the 72 gravitation foundations was estimated to cover an area of about 45 000 m^2, corresponding to 0.2% of the total area of the wind arm (Dong Energy *et al.,* 2006). Nevertheless, with the expansion of more than 30 000 offshore wind turbines during the next 20 years, there will be a significant increase of hard substrates in European coastal areas. Unfortunately, most monitoring programs of wind farms end after only a few years resulting in a low knowledge of the long-term effects.

5.1.2 Fish assemblage

The hard substrate habitat created by the introduction of wind farm foundations and scour protection will be colonized within hours or days after construction by bottom-living and semi-pelagic fish species (Golani and Diamant, 1999; Wilhelmsson *et al.*, 2006b; **PAPER I**). It is fish from nearby reefs that are attracted to the structure itself. How long time the first colonisation by fish will take is related to time when the construction occurs (e.g. what month of the year) as many fish have seasonal cycles, especially in temperate and cold-water regions (Holbrook *et al.,* 1994). Once the epibenthic assemblage starts to develop, as described earlier, the newly created habitat can support other fish species with ecosystem function and services such as food, shelter and spawning opportunities (Wilhelmsson *et al.,* 2006a, b; Moreau *et al.,* 2008; **PAPER I**, **II**). Habitat characteristics such as water depth, complexity and hydrographical parameters like water temperature, turbidity and salinity are other determining factors for colonization of the foundations (Connell and Jones, 1991; Elliot and Dewailly, 1995; Charbonnel *et al.,* 2002; Magill and Sayer, 2002). Over time, more species will be found around the foundations including juveniles that use the habitat as nursery area. Especially bottom associated species like gobies, wrasses and eelpout was noticed by Wilhelmsson *et al.* (2006a) and observed in **PAPER I** and **II** to respond to the introduced structures. Different species will respond in various ways to the introduction of the foundations as fish in the area can aggregate from the nearby area, attracted by the habitat for feeding (e.g. black gobies (*Gobius niger*) in **PAPER II**)

(see Fig. 7b) or new production of individuals as the habitat functions as spawning and nursery area, thus resulting in an increased carrying capacity of the area (Bohnsack, 1989). Bottom associated species will respond faster than the pelagic species as it is the bottom habitat that has been altered and they often have a more rapid life cycle. Gobies, especially the two-spotted goby (*Gobiusculus flavescens*) were found in large densities around wind turbine foundations and its protruding parts, feeding on zooplankton (Wilhelmsson *et al.,* 2006a; **PAPER II**). Fish could benefit from the changed water movements and turbulence, as it would enhance encounter rates of plankton, thus increasing feeding (Rothschild and Osborn, 1988). However, whether or not turbulent water enhances feeding rate among planktivours fish and fish larvae is debated and field observations and experiments show somewhat contradictory results (MacKenzie, 2000; Utne-Palm, 2004). Since gobies and most other species have pelagic larvae, it is difficult to say where the recorded two-spotted gobies in the three following papers come from; Wilhelmsson *et al.* (2006), **PAPER I** and **II**, since water currents could transport the larvae from far away (Caley *et al.,* 1996; Beldade *et al.* 2007). The fish larvae will encounter the foundations more easily than horizontal seabed as they protrude through the whole water column and the created assemblage on and around the foundation are suitable habitats for settlement (Wilhelmsson *et al.,* 2006a; **PAPER II**). However, the juveniles can only be regarded as new to the population if they would have died instead of settling on the foundations, thus proving new production difficult. The foundations will also function as spawning areas as mussel shells and macroalgae could be utilized as nest (Skolbekken and Utne-Palm, 2001). Additionally, gravid females were notices around several foundations in **PAPER II**. Based on this knowledge and by viewing the overall seabed characteristics of the strait where the wind turbines are located, the large abundance of two-spotted gobies are suggested being the result of new production.

Species diversity will increase on the foundations, but will level off after some time and stay more constant, but could still vary over season, especially in temperate and cold waters (Golani and Diamant, 1999; Wilhelmsson *et al.,* 2006b; **PAPER I**). The dominant natural substrate character (e.g. soft bottom, rocky bottom, and seagrass or macroalgae meadows) of the construction area will determine the number of new species found on the introduced vertical hard surface and the added rocky scour protection (Walsh, 1985; Coll *et al.,* 1998). When placed on an already rocky dominant seabed, few new species will be added to the area but the increase in total habitat surface could sustain more individuals (**PAPER II**). In contrary, when placed on a soft bottom, most of the colonizing fish will be hard bottom associated fish increasing the diversity of the area (**PAPER I**).

To summarize, fishes move to exploit resources, mainly food and shelter. Basically, fishes select foraging areas to maximize food intake and minimizing threats by available shelter. Fish that are only relocated to a smaller area and not replaced by new individuals as a consequence of, e.g. finite larval supply and limited food will not result in an overall population benefit, instead by aggregating towards a smaller area, the fish might be easier to catch by piscivorous fish or humans. Alternatively, new production is a more positive outcome, caused by new settlement of pelagic fish larvae that survives to spawn as adults, contributing with new individuals to the local population (**PAPER I**, **II**).

Pelagic species could be positively affected by the increased numbers of small benthic- and semi-pelagic fish in the wind farm area as food availability increases - but it takes time. To show that a wind farm has an effect on the fish population in a larger area, positive, negative or no effect is quite difficult and requires several years of monitoring to distinguish the effect of the wind farm from annual variations. Additionally, it takes several years for many species to become sexually mature and reproduce (e.g. for cod 2-4 years and for herring 3-5 years) and thus, contribute to the population in terms of new individuals. Commercial species like cod, eel, salmon, herring and several species of flatfish are subjected to intense fishing making it even more difficult to determine if any change in density was caused by the wind farm. The common methods used in monitoring effects of wind farms, e.g. echo sounders, otter and beam trawls, gillnet and fyke nets (see Fig. 2), sample's only parts of the fish ecosystem and will only alert for a drastic change in fish community. Most results produced in the monitoring programs are difficult to find and are rarely published making it difficult to draw any conclusions of the effect on fish from the last decade's expansion of offshore wind farms. Those studies that are publically available (especially from wind farms in the UK and Denmark) have shown

no or little effect on fish abundance, but as describe earlier, most have been conducted only 2 to 3 years pre and post construction (see Dong Energy *et al.*, 2006; CEFAS, 2009). No programs have used visual census by scuba diver as was done by Wilhelmsson et al. (2006a) and in **PAPER II**. The relative small-scale effect on the fish community noticed in these two studies would not been observed in the other projects due to different sampling methods (Andersson *et al.*, 2007a). Even the longest monitoring program conducted to date, i.e. at the wind farm Lillgrund, in southern Sweden in the Öresund strait, showed no overall increase in fish numbers although redistribution towards the foundations within the wind farm area was noticed for some of species (i.e. cod, eel and eelpout) (L. Bergström, personal communication). Additionally, more species were recorded after construction than before; agreeing with the hypothesis that introduced hard bottom on a soft bottom area will increase the biodiversity locally.

Today, there is a limitation in technology and economy to build in waters deeper than about 30 m. One exception is the two demonstrator turbines built at 45 m depth in the EU supported DOWNVInD project. If more seabed mounted or floating wind turbines are constructed in deeper waters, biological important shallow offshore banks could be spared and the contractors would receive less complains from coastal communities and tourist organizations.

There is a lack of management awareness and courage as stated by Petersen and Malm (2006) and Inger *et al.* (2009) in terms of decisions on where wind farms should be built and, dependent upon site, if they should be designed to either minimize negative the environmental impact or enhance the reef effect. Once a wind farm is built in an area with little biological importance, and if it is desirable, efforts should be made to increase the area's biological diversity by adding more artificial hard substrate than merely the foundations to create a living area and preferably make it a marine protective area (MPA). The MPAs need to be large enough to accomplish an effect on the fish ecosystem and it takes time (Côté *et al.*, 2001; Claudet *et al.*, 2008*)*. When incorporated into modern fishery management, the refuge areas could contribute to commercial fisheries in small scale (Roberts *et al.*, 2005; Gaines *et al.*, 2010). There are however, other issues of possible disturbance to the fish ecosystem that need to be addressed such as effect from electromagnetic fields and noise and the latter will be dealt with in the next chapter.

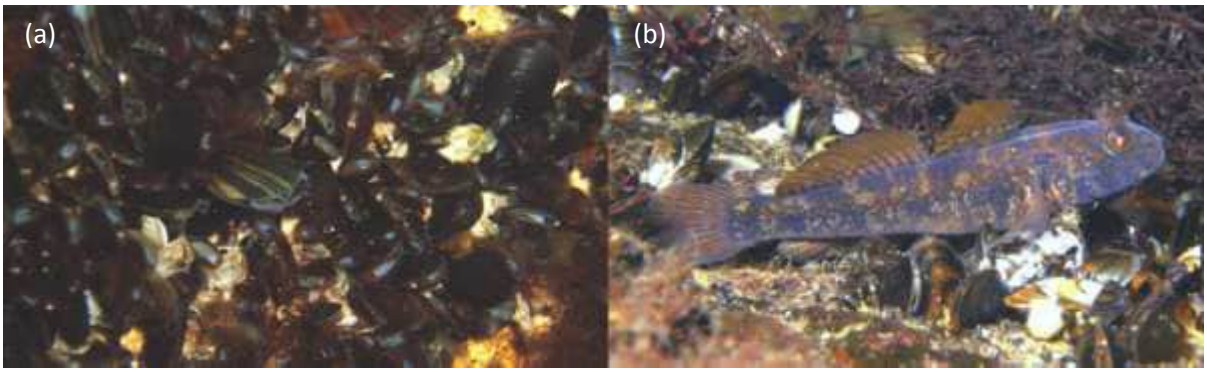


Figure 7. (a) Blue mussels (*Mytilus* spp.) and barnacles (*Balanus improvises*), (b) black goby (*Gobius niger*) found on and around wind turbine foundations at Utgrunden wind farm. © Mathias H. Andersson.

5.2 Noise from offshore wind farms and impact on fish

5.2.1 The effect of construction noise on fish

Presently pile driving is of major concern, especially in shallow waters (Erbe, 2009; Popper and Hastings, 2009). This method is the most commonly used in construction of offshore wind farms. For more details about pile driving noise, see chapter 3. Pile driving is the only anthropogenic non-blasting sound source that has killed and caused hearing damage in fish in the natural environment (see Popper and Hastings, 2009 and references therein). There have been few scientific studies of the effects of pile driving noise on the behaviour of fish as most are done by subcontractors to construction companies and not peer-reviewed (Popper and Hastings, 2009). Results from these studies vary, showing either strong or moderate effects or no effect at all. Further, fish cages used in many studies are small and might themselves affect the behaviour of the fish. Data are lacking not only on the immediate behavioural effects on fish close to a source, but also effects on fish further away from the source. **PAPER III** aimed to study the swimming behaviour in fish before, during and after 10 minutes of playback pile driving noise using an underwater loudspeaker in a semi-natural condition, i.e. 40 m wide mesocosm with natural seabed inside. This is the first study to demonstrate significant behavioural reactions in cod (*Gadus morhua*) and sole (*Solea solea*) to sound level's occurring up to 70 km away from a piling event. This result shows that the zone of impact on fish with relative good hearing (cod) is considerable large and that species lacking a swim bladder (sole) will react to the noise as well.

Playback was achieved using a J11 loudspeaker and the acoustical soundscape in the mesocosm was monitored as well as the movement of tagged fish. Both sound pressure and particle motion was measured where the latter component was measured using the sensor described in **PAPER IV**. The result showed a significant gradient in noise levels within the two mesocosm, allowing the fish to move from areas with different sound intensities. The piling noise used in **PAPER IV** was measured by Betke (2004) at a distance of 400 m. It can be assumed that the piling pulses from a piling event will change shape as a function of distance. However, spectral analyses show that most energy of the pulse is found below 1 kHz, thus the pulse is firsthand attenuated. The results of fish behaviour shown in **PAPER III** to pile driving noise are, therefore, valid at distances larger than 400 m. The study intended to find a threshold for behaviour reaction, but the results showed that there is a range in received levels were reactions occurred, both to sound pressure and to particle motion.

The typical behaviour of the cod was a significant initial "freezing response" at the onset of the piling noise followed by a period of increased swimming speed during noise exposure. When the noise was switched off the speed decreased again (more details in Mueller-Blenkle *et al.*, 2010; **PAPER V**). However, the variety in swimming speeds by individual cod during the playback period resulted in an overall non-significant effect. The reaction to the noise by cod is exemplified in Fig. 8a where the swimming pattern of one cod is shown. The trend of increased swimming speed was more profound in the near mesocosm experiencing higher levels of sound pressure and particle motion compare to the farther, indicating a behaviour threshold of between 153 and133 dB re $1\mu Pa_{(peak)}$. Cod showed a clear response to sound pressures between 156 and 142 dB re $1\mu Pa_{(peak)}$ and particle acceleration levels between 6.5×10^{-3} and 8.6×10^{-4} $m/s^2{}_{(peak)}$ in the mesocosm closest to the loudspeaker. Only the radial component of particle acceleration in relation to the sound source is presented in **PAPER III**. In the far mesocosm, levels were measured to be 143 to 133 dB re 1µPa and 6.6×10^{-4} to 4.1×10^{-4} $m/s^2{}_{(peak)}$ with less or no reactions. It is not straightforward to compare received levels with the ambient noise at the experimental site since the piling pulse is a transient and the ambient noise is a continuous sound (Madsen, 2005). **PAPER III** shows higher ambient sound pressure levels than **PAPER V** even though **PAPER III** was conducted in an area with low anthropogenic disturbances. This could be attributed to low-frequency noise emanating from the mesocosm structure and mooring chains.

As discussed earlier, few behavioural studies on piling noise exist or have been subjected to any peer-review process. However, other high-energy acoustic sources such as seismic surveys were shown to cause a significant decline in catch rate in cod and haddock (*Melanogrammus aeglefinus*) that lasted several days after sound exposure was stopped (Engås *et al.*, 1996; Engås and Løkkeborg, 2002).

Skalski *et al.* (1992) reports on similar results were reduced catch of rockfish was observed (*Sebase* spp.) when exposed to air-gun noise. Pearson *et al.* (1992) showed that the rock fish reacted to the air-gun noise by either changing depth and/or increasing or decreasing swimming speed. They concluded that threshold for the more acute responses was 180 dB re 1µPa, but subtle reactions could occur already at 161 dB re 1µPa. The latter threshold is in line with the results of **PAPER III.** Variations in responses to sound between and within fish species were also shown by Andersson *et al.* (2007b) and Nedwell *et al.* (2007) and are linked to animal's individual tolerance to a stimulus.

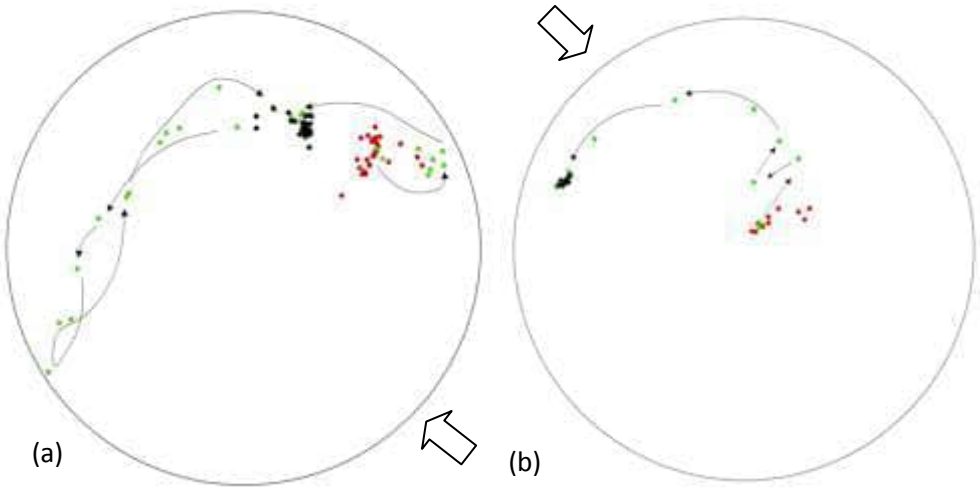


Figure 8. Example of behaviour reaction from (a) cod and (b) sole when exposed to pile driving noise in large (40 m) cages (**PAPER III)**. ● Red dots: movement before sound playback, ● green dots: movement during sound playback, ● black dots: movements after sound playback. The arrows outside the circles indicate the direction of the sound source. Both fish were in the cage closest to the loudspeaker. Figure redrawn from Muller-Blenke *et al.* (2010).

Sole showed a significant reaction in terms of increased swimming speed during playback at levels between 6.5 $x10^{-3}$ to 4.1 $x10^{-4}$ $m/s^2_{(peak)}$. Notably sole does not sense sound pressure; only the particle motion component of the noise. Thus, defining threshold for sole in terms of sound pressure is erroneous. Fig. 8b shows an example of reaction by one sole to the noise. The sound levels in **PAPER** III were lower than sound produced in front of inlets to power plants and constructions in lakes and rivers that were observed to induce escape reactions in several fish species (Knudsen *et al.* 1992; Sand *et al.* 2000; Sonny *et al.* 2006), thus, illustrating the variation in behavioural thresholds between species.

The loudspeaker was suspended 2.5 m above the seafloor and reactions in sole were not expected to occur. Sole and other flatfish lie on the seabed relying on their camouflage to hide them from predators and they are also known to be more active during the night (Kruuk, 1963). Gibson (1975) observed that plaice spent only 6% of their time swimming. The reactions noticed for sole in **PAPER III** are significant, showing that the sole were disturbed. By leaving the well camouflage position on the seabed the sole will be subjected to a higher risk of predation. Lagardère *et al.* (1994) demonstrated that sole reacts to wind induced noise although this was not observed in **PAPER III**. Field measurements of particle motion during piling are not available today, making conclusions of the zone of impact for sole unanswered. However, benthic species like the sole might be subjected to significant levels of pile driving noise far away from the actual operation as particle motion is transported through the sediment and radiates back into the water column, as speculated by Hawkins (2009).

There was some indication of a horizontal directional response away from the noise source by both cod and sole when they experienced the noise for the first time (Mueller-Blenkle *et al.*, 2010). There might have been other avoidance response not possible to detect with the present experimental set-up, such as a vertical movement as described by Pearson *et al.* (1992). Fish use particle motion for source

localization (see section 4.3) and the measured levels of particle acceleration were substantially higher than the ambient motion, suggesting that both cod and sole could sense the direction of the noise source. The change in overall swimming speed was less pronounced after the fish was exposed to repeated exposures. These results could be explained by habituation, i.e. increased tolerance threshold to the repeated noise. However, the effect was only noticed on an individual level, data do not support an overall conclusion. It should be underlined that habituation is not necessarily a preferred effect as there are costs involved as well (see Bejder *et al.,* 2009).

The sole in **PAPER III** was caught in the wild using trawl while the cod was farmed at the nearby hatchery. Ambient noise in the rearing thanks where the cod was held most of their life prior to the experiments and in the temporal holding tanks for sole was relatively low and similar in sound level to the ambient noise at the experimental site. As a consequence, the observed reactions in the experiments give a clear indication that the fish was disturbed by the noise. Owing to the known acoustic history for the cod, the results obtained are assumed to be valid to wild cod.

At the moment, there are no interim criteria for the onset of behaviour reactions or injury to fish from pile driving, similar to the criteria used for marine mammals (Southall *et al.,* 2007). However, Popper and co-authors (2006) wrote a white paper suggesting interim criteria based on the present knowledge of effects from piling and air-guns acknowledging that a direct comparison between those two noise sources is less than optimal. They proposed that interim criteria to be set at an SEL level of 187 dB re $1\mu Pa^2 \cdot s$ and a peak sound pressure level of 208 dB re 1µPa for any single strike. There are several studies in progress that are investigating the physiological effects from pile driving and ways to estimate and implement SEL into regulations (see for example Ainslie *et al.,* 2011; Erbe, 2011; Halvorsen *et al.,* 2011; Rodkin *et al.,* 2011). There has been no attempt to suggest interim criteria for particle motion due to the lack of investigations studying this phenomenon. The same status applies to the work on determining thresholds for behaviour reaction to transient sounds, although it is commonly cited as an exceedingly important task.

There are ways to decrease the noise produced during pile driving by using mitigations, such as bubble curtains, soft-start, ramp-up procedure, the use of deterrence devices or by enclosing the ramming pile with acoustically isolated material (for further details see Thomsen *et al.,* 2006; OSPAR, 2006). Soft start and ramp-up intend to scare away fish and marine mammals before the noise reaches damaging levels. These activities will decrease the zone of impact although levels are still loud enough to cause significant hearing damage in fish or behavioural reaction as observed in **PAPER III** (Popper and Hastings, 2009). The construction of most wind farms today are often only allowed during certain month when there is no spawning activity to prevent any impact. Still, avoidance from important commercial imported fishing grounds might occur all year around. More studies are needed on the impact from pile driving and other loud anthropogenic sources like air-guns involving measurements of particle motion to prevent negative impact on fish. There are other potentially indirect effects from piling noise such as masking or stress and this is discussed in the next section.

5.2.2 Offshore wind farm production noise and effects on fish

Concerns about the effects offshore wind farm induced noise is not only restricted to construction noise. The high intensity sound produced during piling is short-term while the noise produced during operation are long-term, more than 20 years (Wahlberg and Westerberg, 2005; Popper and Hastings, 2009). Knowledge of the characteristics of operational noise and the cumulative effect from several turbines is needed and have been on the wish-list for a long time (Wahlberg and Westerberg, 2005; Madsen *et al.*, 2006; Kikuchi 2010; Slabbekoorn *et al.*, 2010). The aim of **PAPER IV** and **V** was therefore to increase the knowledge on the noise produced by offshore wind farms and relate the measured levels and characteristics to hearing thresholds of fish and evaluate possible negative effects.

The noise from wind turbines is generated by the gearbox and generator and transferred into the water and sediment through the tower and foundation (Lindell, 2003; Betke *et al.*, 2004; **PAPER IV**). The blade-generated noise (0.5 to 2 Hz) was found to be reflected by the water surface or masked by wind-induced sound (Lindell, 2003; **PAPER IV**). Sound pressure is measured by using commercial available hydrophones while particle motion sensors are still not available on the market. A novel particle motion sensor was developed by Peter Sigray and Tim Fristedt at the Department of Underwater Research, Swedish Defence Research Agency (FOI), by combining known theories with an innovative design (**PAPER IV)**. The sensor makes use of three seismic accelerometers situated orthogonally to each other inside a plastic sphere. The sphere was made neutrally buoyant to co-oscillate with the external sound. This sensor has a robust design allowing it to be deployed in long-term measurements in the sea (see Fig. 3a), which is not the case for the existing sensors (McConnell and Jensen, 2006; Kim et al., 2008). Measured particle acceleration levels presented in **PAPER III** and **IV** are only expressed in terms of the radial component (x-axis) in relation to the sound source, i.e. the loudspeaker and monopile foundation. To show that the measured underwater noise was generated by the turbines, data from 3-axis accelerometers mounted either on the foundation or the gearbox were compared to measured noise from the underwater sensors (see Fig. 3b, c). The spectral characteristics of the noise generated by a wind turbine on a steel monopile (Utgrunden wind farm, **PAPER IV**) and a turbine on a concrete gravitation foundation (Lillgrund wind farm, **PAPER V**) were similar, showing a broadband character with a few dominating tones (Fig. 9). Both types of turbines generated tones below 600 Hz with one dominant tone between 100 to 200 Hz. These results agree with other measurements of operational noise (see comparisons and cited reports in Wahlberg and Westerberg, 2005; Madsen *et al.*, 2006 and measurements in Tougaard and Damsgaard-Henriksen 2009). When the wind is steady, the tones are stable and found inside a narrow band. During changing wind speeds and gusts the tones slides up and down apparently spreading the energy over a frequency interval (**PAPER IV**, **V**) (Fig. 9). Hence, to accurately estimate the acoustical energy of the tones, integration over a specified frequency window has to be performed.

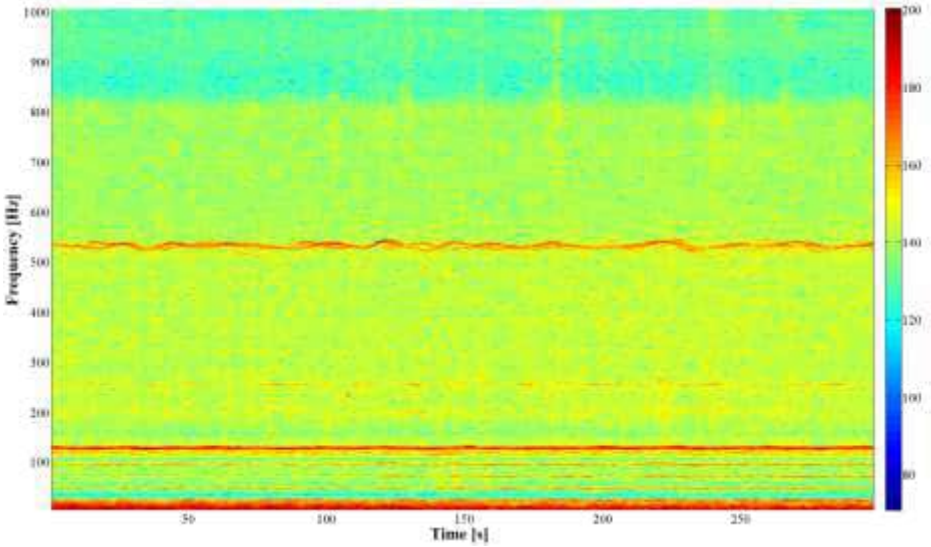


Figure 9. Spectrogram of 5-min recorded operational noise 160 m from a turbine at the Lillgrund wind farm. The tonal components are clearly visible below 1 kHz with 127 Hz being the strongest tone. The sliding effect is clearly visible for 533 Hz tone. The colour bar to the right shows the sound pressure in dB re 1µPa.

To estimate the total acoustic energy input to the ocean from a wind farm the energy of the entire spectrum is integrated (**PAPER IV, V**). However, fish has auditory filters called critical band filters (see section 4.4.2) that make detection of tones possible in an otherwise noisy environment. By integrating over different frequency windows, the intensity of the individual tones can be estimated when comparing the noise with hearing threshold from fish and other marine animals.

There are considerable discrepancies in wind farm source levels presented from various measurements most likely owing to differences in recording conditions, size and shape of the foundation, age and model of turbine. Most recordings were also performed at different distances to the turbines making comparisons difficult as transmission loss is site specific. The number of turbines in a wind farm will also contribute to the received noise level at different distances (**PAPER V**). The contribution from all the turbines in a wind farm (consisting of 48 turbines) was calculated to be 7 dB larger than the sound generated by one turbine (**PAPER V**). Source level and received levels were determined for several distances and production levels by developing a numerical model, validated by field measurements (see Table I, **PAPER V**). However, estimations of the source levels from other wind farms for the tonal components (from 25 to 180 Hz) were found to be between 150 to 120 dB re $1\mu Pa_{(RMS)}$ (Wahlberg and Westerberg, 2005; Tougaard and Damsgaard-Henriksen, 2009). The source $level_{(1m)}$ at Lillgrund are within that range; 136 to 132 dB re $1\mu Pa_{(RMS)}$ for the 127 Hz tonal component during 60 % and 100% power efficiency (**PAPER V**). These sound levels are produced 30 % of the time during the years 2008 and 2009, based on wind and power data. There are no studies to date to compare the measured source level of particle motion obtained in **PAPER IV**. The highest noise levels were recorded at 1 m distance from the foundation during moderate wind speeds (1.2×10^{-2} to 9×10^{-3} to $m/s^2_{(RMS)}$ for the strongest tones) whereas Lindell (2003) recorded the highest sound pressure at high wind speeds as discussed in **PAPER V**. However, this difference could be explained by the change of gearboxes of the Utgrunden turbines that was done between the two measurements (cf. Lindell (2003) and **PAPER IV)**.

Once the source level is calculated, a zone of audibility can be estimated for different species by comparing with known audiograms. Both the transmission loss for the area and ambient sound has to be known since they will affect the estimation. The Öresund strait is a noisy area with intense shipping. Nevertheless, the dominant tonal component of the wind farm noise (127 Hz) will pierce the ambient noise and make the wind farm detectable by fish at significant distances (**PAPER V**). Species like eel and salmon having poor sensitivity to sound pressure will only detect a wind farm like Lillgrund (during maximum production, wind speeds of 14 to12 m/s) at a distance less than 1 km (based on a detection threshold of 0 dB). Fish with higher sensitivity of sound pressure, e.g. herring and cod, might detect the wind farm at a distance greater than 16 km. At this distance, the ambient noise of the trait will mask out the wind farm noise (**PAPER V**). These results are in line with other estimations of detection distance for the species presented above (Wahlberg and Westerberg, 2005; Thomsen *et al.,* 2006). All these estimations are associated with uncertainties since they are based on the assumption that all fish within a species have the same hearing threshold, which is not true as there are individual differences in sound detection (see references in **PAPER V** for the audiograms used in above estimations and Popper and Fay, 2010). In an area with different acoustical properties; the detection distances can be either shorter or greater. One can further assume that the signal detection is achieved at different signal-to-noise ratios (Chapman and Hawkins, 1973; Popper and Fay, 1973).

Fish lacking a swim bladder (e.g. gobies and flatfish) will only sense the measured particle acceleration at distance of about 10 meters from the foundation (Enger *et al.,* 1993; Horodysky *et al.,* 2009; **PAPER V**). Farther away, most species are limited by either there hearing threshold or the ambient sound masking the wind farm noise. The sensor measures the radial component of particle motion towards the sound source in the water and not levels on the seabed. The detection distance could therefore be greater for species laying in direct contact with the seabed as sound are not only induced to the water but also into the seabed as sound has even higher speed in the bottom than water.

The source levels presented in **PAPER III**, **IV** and **V** are not high enough to cause any injury on fish. They are, however, in the region of levels causing a behavioural reaction as observed in **PAPER III** although a direct comparison to **PAPER IV** and **V** is not possible to do due to the difference in acoustic properties. In close vicinity (less than 10 m) to a turbine the received level (about 119 to 136 dB re 1µ$Pa_{(RMS)}$ for the 127 Hz component) are most likely sufficient to evoke a behavioural reaction in some species like cod. Westerberg (1994) noticed higher catch rates of cod and roach in the vicinity (100 m) of a turbine compared to farther away when the turbine was stopped (turbine source $level_{(1m)}$ was between 102 and 113 dB re 1µPa), while tracked eels did not show any effect. In another study using tagged silver eels passing the Lillgrund wind farm performed in conjunction with **PAPER V**, no effect on swimming speed or direction were observed when eels were intercepting the wind farm (Andersson *et al.*, 2011). Owing to the resolution of the data, behavioural reactions similar to those studied in **PAPER III** were not possible to detect. Andersson *et al.* (2007b) demonstrated startle responses in three-spined sticklebacks and roach to playback of wind farm noise. The particle motion was not measured, thus making it difficult to draw any conclusion in terms of sound pressure threshold as the stimuli in the small tank was most likely particle motion. Other studies have shown that shipping noise causes avoidance reaction in fish such as changing depth or swimming speed (Mitson, 1995; Vabø *et al.*, 2002; Draštík and Kubečka, 2005 and section 4.4.3). Mitson (1995) reported further that cod reacted to shipping noise with a signal-to-noise ratio about 30 dB. Similar reaction threshold was estimated for cod, juvenile and adults, when exposed to single tones in the frequency interval 25-250 Hz in order to test habitat preferences (Müller, 2007). However, no measurement of particle motion was performed in the tank, limiting the validity of the conclusions. There are no consensus in appropriate threshold values for behavioural reactions in fish although Nedwell *et al.* (2003; 2006) proposed that sound pressure levels of 90 dB above the hearing threshold in fish could lead to significant avoidance reactions, and more subtle behavioural reactions at 75 dB. However, as **PAPER III** and other cited studies have shown, strong behaviour reactions could occur at much lower threshold and that the signal-to-noise ratios are a better descriptor since it is related to ambient noise. There are a few studies on behavioural thresholds in terms of particle motion. Studies using a sound projector producing low frequency tones (less than 20 Hz) to test avoidance reactions on juvenile salmon, eel and roach showed reaction thresholds of between 10^{-2} and 10^{-3} m/s^2 (Knudsen *et al.*, 1992; Sand *et al.*, 2000; Karlsen *et al.*, 2004; Sonny *et al.* 2006), These levels corroborate with observations measured levels close (less than 10 m) to a wind turbine foundation (**PAPER IV**).

Fish will most likely respond in different ways to various noise sources. The tolerance thresholds are linked to age, sex, condition, season and habitat preferences (Hawkins, 1993; Mitson, 2000; Popper *et al.*, 2004). Fish may respond spontaneously to sound by changing their behaviour or showing a startle reaction. Fish may habituate over time to repeated sounds with the results that it becomes difficult to evaluate effects of noise in laboratories and then applying the results to the natural situation. However, it is not certain that all fish will swim away from an area even with high noise disturbance since there is an individual tolerance level to a disturbance among animals (Beale and Monaghan, 2004). The choice of staying or leaving will depend on this tolerance and if the animal has enough energy to change habitat. An animal might also stay if the habitat is vital for its survival in terms of feeding, spawning or sheltering (Bejder *et al.*, 2009). Noise has been show to induce higher levels of the stress hormone cortisol in fish, which could disrupt growth, maturation and reproductive success (Pickering, 1993; Small, 2004). Davidson *et al*, (2009) demonstrated slower growth rate in rainbow trout (*Oncorhynchus mykiss*) during the first month of high noise exposure in an aquarium experiment, but no overall discrepancy between high (149 dB re 1µ$Pa_{(RMS)}$) and low (117 dB re 1µ$Pa_{(RMS)}$) treatments after six months. Slow initial growth rate were also noticed for caged carp close to a drilling operation (Sun *et al.*, 2001). Nonetheless, fish in the two experiments recovered after some time. Being small could increase the risk to be eaten by predators and is, therefore, a significant negative effect of noise. The effect of noise on fish egg and larval development are limited and results are somewhat contradicting (reviewed in Popper and Hastings, 2009). However, eggs and to some extent larvae cannot swim away when exposed to high levels of noise and are, therefore, more venerable than adult fish.

Many fishes use sound during spawning, locating mates and antagonistic interaction (Hawkins, 1993; Bass and Ladich, 2008; Kasumyan, 2008; Rowe *et al.,* 2008). Noise from a wind farm increases the ambient noise in the area (**PAPER IV**, **V**) making the detection of these sounds more difficult as the signal-to-noise ratio decreases; a phenomenon called masking, see also section 4.4.2. It occurs only if there is an overlap in frequencies between the induced noise and the sound of interest. For example, boat noise was shown to potentially mask communication of several species of fish (Vasconcelos *et al.,* 2007; Codarin *et al.,* 2009). Masking of spawning and antagonistic signalling might occur close to the foundations where the received noise levels are highest. Gadoid fish can produce grunts at source $levels_{(1m)}$ of 120–133 dB re 1µPa (Hawkins and Rasmussen, 1978; Nordeide and Kjellsby, 1999; Wahlberg and Westerberg 2005), which corresponds to a level of wind farm noise found at a distance less than 10 m from the foundation (**PAPER V**). Wahlberg and Westerberg (2005) estimated that the detection distance of sound produced by haddock would be reduced due to masking from a wind farm, although still detectable at a distance of 4 m. Most interactions such as spawning sounds occur at short distances (Brawn, 1961; Amorim and Neves, 2008) where both sound pressure and particle motion are relevant stimulus. Thus, fishes are most likely able to detect communicative sounds with all their acoustical senses, including the lateral line organ (Lugli and Fine, 2007).

Sound pressure levels in water cannot directly be compared to sound levels in air as they are defined using different reference values, due to the fact that water has higher density than air (1 µPa in water and 20 µPa in air). Still this is often done when attempts are made to make acoustical data accessible for journalists, legislators and the public. It is relative simple to mathematically recalculate the sound levels, but it should be underlined that marine organism receiving sound in the water has a different set of hearing organs compared to humans. The comparison between sound sources measured in different medium will only be hypothetical and should therefore be avoided (Finfer *et al.,* 2008).

In summary, owing to the restricted knowledge of sound detection in fish and the limitation in sound pressure estimations, fish without a swim bladder or other sound pressure detector, e.g. sculpins, gobies and flatfish will only perceive offshore wind farm noise close (less than 10 m) to the foundation generated during maximum power production. Fishes with a swim bladder sensitive to sound pressure although not having any enhanced hearing ability, e.g. salmon, trout (*Salmo trutta*), eel, perch (*Perca fluviatilis*), and pike perch (*Stizostedion lucioperca*) will possibly detect the noise up to 1 km distance. Species having better hearing than previously mention species, e.g. cod, haddock (*Melanogrammus aeglefinus*) and herring could detect the wind farm at a distance of several kilometres up to tens of kilometres. Finally, species with a specialization to enhance pressure detection (i.e. Weberian ossicles) like carp, roach (*Rutilus rutilus*) and goldfish (however goldfish in not that common the Baltic Sea or the Öresund strait) can detect the wind farm at more than 20 km distance. Although the last two groups of fish will most likely perceive the wind farm at much less distance as the ambient noise masks the wind farm noise within 16 km distance. The long detection ranges are caused by the tonal components of the wind farm noise piercing the ambient noise as well as the "park effect" raising the induced noise levels with another 7 dB. If these tones are removed, the possible impact on fish and other marine organisms will likely decrease, including possible behavioural reactions. With new technology that already is available for wind turbines on land (i.e. direct drive of the gearbox) and by implementing the knowledge of fish hearing, the impact from offshore wind farm generated noise could be drastically reduced.

EPILOGUE

What about attraction due to reef effect or avoidance due to noise? My first notion of a possible noise disturbance to fish from offshore wind farms came during a dive around a wind turbine performing a visual census of the fish ecosystem. It felt like my whole body vibrated when passing close to the foundation. The noise was also clearly audible by my ears at a considerable distance. However, fish where swimming care free, to my observation, in the loud noise. As this thesis has described, the introduction of offshore wind foundations will affect the local demersal fish ecosystem and possible also free ranging pelagic species. An attraction effect has been confirmed by mine and other studies. An increase in overall biomass (i.e. new production) of fish has not been proven although some indication from this study and other artificial reef studies point in that direction. Still, it takes time for any significant effect to be observable due to natural variation. Apparently, some fish will live in close vicinity to these wind turbine foundations and also temporally spend time foraging around them. However, generated noise described in this thesis shows that moderate levels of broadband noise with strong tonal components, clearly audible for many fish, occurs at several kilometres away. It is only within a few meters of the foundations that the noise is at a level that could cause significant behavioural reactions as shown in aquaria and field studies. Whether or not the fish are adapting to the noise is difficult to prove scientifically, but if there are indirect effects these could affect the local population. The answer to the stated question is that the question is wrongly formulated, the issue is more complex. My suggestion is that future studies should combine acoustic measurements with behavioural studies using acoustical tags to monitor fish movement within and outside the wind farm to evaluate the two effects.

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Appendix 8
Radford et al (2016)

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Repeated exposure reduces the response to impulsive noise in European seabass

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Abstract

Human activities have changed the acoustic environment of many terrestrial and aquatic ecosystems around the globe. Mounting evidence indicates that the resulting anthropogenic noise can impact the behaviour and physiology of at least some species in a range of taxa. However, the majority of experimental studies have considered only immediate responses to single, relatively short-term noise events. Repeated exposure to noise could lead to a heightened or lessened response. Here, we conduct two long-term (12 week), laboratory-based exposure experiments with European seabass (*Dicentrarchus labrax*) to examine how an initial impact of different sound types potentially changes over time. Naïve fish showed elevated ventilation rates, indicating heightened stress, in response to impulsive additional noise (playbacks of recordings of pile-driving and seismic surveys), but not to a more continuous additional noise source (playbacks of recordings of ship passes). However, fish exposed to playbacks of pile-driving or seismic noise for 12 weeks no longer responded with an elevated ventilation rate to the same noise type. Fish exposed long-term to playback of pile-driving noise also no longer responded to short-term playback of seismic noise. The lessened response after repeated exposure, likely driven by increased tolerance or a change in hearing threshold, helps explain why fish that experienced 12 weeks of impulsive noise showed no differences in stress, growth or mortality compared to those reared with exposure to ambient-noise playback. Considering how responses to anthropogenic noise change with repeated exposure is important both when assessing likely fitness consequences and the need for mitigation measures.

Keywords: anthropogenic noise, *Dicentrarchus labrax*, European seabass, growth, habituation, hearing threshold, pollution, stress, tolerance, ventilation rate

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Introduction

Human activities, such as energy production, resource extraction, urban development and transportation, have changed the acoustic environment across the globe (Barber *et al*., 2009; Slabbekoorn *et al*., 2010; Normandeau Associates, Inc., 2012). In addition to increasing the amount of acoustic energy, these activities often generate sounds that are different from those arising from natural sources (Hildebrand, 2009; Normandeau Associates, Inc., 2012). Many recent studies have shown that the resulting anthropogenic noise can have an impact on the behaviour and physiology of at least some organisms, as well as on community structure and ecosystem function (Barber *et al*., 2009; Slabbekoorn *et al*., 2010; Morley *et al*., 2014; Shannon *et al*., 2016). However, the majority of experimental work to date has measured responses only once and/or to single, relatively short-term noise exposures (e.g. Halfwerk & Slabbekoorn, 2009; McLaughlin & Kunc, 2013; Simpson *et al*., 2015, 2016). While that research has produced undoubtedly important knowledge, experimental investigation of the possibility that responses might change with repeated exposure (Bejder *et al*., 2009; Radford *et al*., 2015) is crucial both for a full understanding of the fitness consequences of noise exposure and for an accurate assessment of the need for mitigation measures.

Response moderation to repeated stimulus exposure can potentially result from a change in individual tolerance levels (Nisbet, 2000) or, in the case of noise stimuli, a shift in hearing threshold (Popper & Hastings, 2009). An increased responsiveness over time could arise through sensitization, when animals become less tolerant as they learn that the stimulus has significant consequences for them (Richardson *et al*., 1995). Higher levels of human disturbance have been shown to result in heightened responses, such as increased levels of stress hormones, in a variety of species (e.g. Ellenberg

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et al., 2007; Strasser & Heath, 2013; Menard et al., 2014). A decreased responsiveness over time could also arise through a change in tolerance, through habituation – persistent waning of responsiveness if repeated stimulation is not followed by reinforcement (Thorpe, 1963). Reduced behavioural and physiological responses to continued human disturbance have been described in a number of studies (e.g. Ellenberg et al., 2009; Ensminger & Westneat, 2012; Viblanc et al., 2012). A decreased responsiveness over time to noise stimuli could alternatively arise from a shift in hearing threshold; some sources of anthropogenic noise have been shown to cause temporary threshold shifts (transient reductions in hearing sensitivity) in some, but not all, tested fish species (Scholik & Yan, 2001; Popper et al., 2005, 2007; Wysocki et al., 2007). To establish whether there is a change in responsiveness to a particular stimulus requires repeated sampling of the same cohort of individuals across time (Nisbet, 2000; Bejder et al., 2009), something which has only rarely been attempted with respect to anthropogenic noise (Halfwerk et al., 2012; Wale et al., 2013a; Nedelec et al., 2015, in press).

The impact of anthropogenic noise is likely to be affected not only by its level, but also by the characteristics of the sound (Slabbekoorn et al., 2010; Gill et al., 2015; Nedelec et al., 2015); man-made noise sources differ greatly in such aspects as frequency range, amplitude fluctuation and temporal structure (Hildebrand, 2009; Gill et al., 2015). For instance, pile-driving and seismic airguns produce intermittent, impulsive sounds, whereas ships produce intermittent but not impulsive sounds, and wind turbines produce more continuous sounds. Most experimental studies so far have focused on the effect of a single sound type, but recent work has demonstrated that fish behavioural responses and recovery differ depending on the intermittency of short-term (30 min) sound exposures (Neo et al., 2014). Whether and how responses change with repeated exposure to different sound types, and the possibility of generalization (changed response to more than just the source to which an organism has been exposed), are important issues for managers and policymakers.

Here, we report the results from laboratory-based, long-term exposure experiments on juvenile European seabass (*Dicentrarchus labrax*), which examined the immediate and changing effect of various types of noise. Caution is needed when extrapolating from captivity to the wild, as important behavioural and acoustic differences exist (e.g. Rogers, 2015; Slabbekoorn, 2015). But, laboratory studies allow careful control of potential confounding factors, detailed data collection and guaranteed noise exposure at required levels over extended periods of time (Slabbekoorn, 2015). Captive studies therefore provide a valuable stepping stone in the study of environmental stressors (Dixson et al., 2010; Scott & Johnson, 2012), including anthropogenic noise (Wale et al., 2013a,b; Nedelec et al., 2015; Simpson et al., 2015).

All fish species that have been studied are capable of hearing, with many demonstrably using environmental sounds and both conspecific and heterospecific acoustic communications to inform behavioural decisions (Bone & Moore, 2008; Radford et al., 2014). As such, fishes are potentially vulnerable to anthropogenic noise, and there is increasing evidence that at least some species are detrimentally affected in terms of their behaviour (e.g. Picciulin et al., 2010; Bruintjes & Radford, 2013; Simpson et al., 2015, 2016) and physiology (e.g. Wysocki et al., 2006; Anderson et al., 2011; Simpson et al., 2015, 2016). As fish are socio-economically important, yet many species are vulnerable to anthropogenic pressures such as overfishing, ocean acidification and global warming (Harley et al., 2006; Kroeker et al., 2010; Simpson et al., 2011), they are a key taxon to consider with respect to anthropogenic noise. Fish studies to date have mostly examined short-term impacts of additional noise; mixed results have arisen from the limited number of longer-term experiments (see Wysocki et al., 2007; Davidson et al., 2009; Anderson et al., 2011; Bruintjes & Radford, 2014; Nedelec et al., 2015, in press) and there has been little investigation of changing levels of response with repeated exposure.

European seabass are commercially important and there is recent evidence that their physiology is affected by short-term playback of pile-driving noise (Bruintjes et al., 2016), as well as actual pile-driving events (Debusschere et al., 2016). In the current study, we first tested the effect of short-term noise exposure on naïve juvenile fish (those that had received no previous noise playbacks). We compared responses to playbacks of impulsive sound types (recordings of pile-driving and seismic surveys) and a more continuous sound type (recordings of ship passes), using playback of recordings of ambient coastal noise as a control. Recordings of real-world noise sources were used as exemplars of sound types with different acoustic characteristics to test general principles relating to a potential change in response with repeated exposure, rather than to provide information about absolute responses to those particular noise sources. We then exposed cohorts of fish to 12 weeks of each sound type, before investigating whether the initial impacts of short-term exposure were still apparent or whether there had been changes in response. Having demonstrated decreased levels of response, we examined the implications of long-term exposure to different sound types for stress, growth and mortality.

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Material and methods

Ethics

This research adhered to the Association for the Study of Animal Behaviour/Animal Behavior Society Guidelines for the Use of Animals in Research, the legal requirements of the country (France) in which the work was carried out and all institutional guidelines (University of Bristol Animal Services Ethical Committee approval: UB/10/034). Fish showed no signs of pain, suffering, distress or lasting harm during the study; animals were killed by Schedule 1 methods at the end of the experiments.

Study species and holding conditions

Postlarval seabass, captive bred from stock that had been wild-caught >10 years previously, were obtained from Les Poissons du Soleil, Balaruc-les-Bains, France, approximately 1 month posthatching. Fish were transferred to the experimental laboratory at Centre de Recherche sur les Écosystèmes Marins (CREM), Le Barcarès, France, by car (3-h journey; 20-L containers of oxygenated saltwater; ca. 70 fish of average mass 0.02 g per litre). Two separate cohorts were obtained for Experiment 1 (arrival date: 20/01/2014) and Experiment 2 (arrival date: 10/06/2014).

Seabass were kept at the experimental laboratory in plastic, rectangular stock tanks (height: 88 cm; width: 54 cm; length: 66 cm; wall thickness: 3 mm) containing 290 L of filtered saltwater (water height: 80 cm) and a slow-bubbling airstone. Water temperature was 19 ± 1 °C; lighting was provided 12:12 day:night; filtration was via a closed-water recirculation system (TMC System 5000P Marine Reservoir-based Filtration Unit). Fish were fed on commercial aquaculture pellets (Skretting, Norway); initially feeding was multiple times per day to avoid cannibalism; during long-term experiments, feeding was once per day; all tanks received the same feeding regime throughout.

Sound recordings and playback tracks

Experimental playback tracks were created using Audacity 1.3.13 (http://audacity.sourceforge.net/) from original field recordings (as per Wale *et al.*, 2013a; Simpson *et al.*, 2015). Recordings of ambient coastal noise were made at three major UK harbours (Gravesend, Plymouth and Portsmouth) when there were no ships passing close by. Recordings of ship noise were made at the same three harbours when a single ship was passing at ca. 100- to 400-m distance (Gravesend: Rio de la Plata, a 286 m long, 64 730-t container ship; Plymouth: Bro Distributor, a 147 m long, 14 500-t LPG tanker; Portsmouth: Commodore Goodwill, a 126 m long, 5215-t ferry). Ships were travelling at constant, relatively slow speeds (<10 knots), as enforced by port authorities for vessels entering and leaving estuarine areas. Recordings of ambient noise and ship passes were made using a hydrophone (HTI-96-MIN with inbuilt preamplifier, High Tech Inc., Gulfport MS; manufacturer-calibrated sensitivity −164.3 dB re 1 V μPa^{-1}; frequency range 0.2–30 kHz), positioned at 1 m depth 20–40 m offshore, and a digital recorder (Edirol R-09HR, 44.1 kHz sampling rate, Roland, Hamamatsu, Japan). The recording level was calibrated using pure sine wave signals from a function generator with a measured voltage recorded in line on an oscilloscope.

Recordings of pile-driving in Swansea Bay, United Kingdom, were made 127 m from the sound source (a 1.2-m-diameter monopole driven ca. 25 m into the seabed with a 6.5 m water depth), with a hydrophone (HTI-99HF, High Tech Inc., Gulfport MS; manufacturer-calibrated sensitivity −204 dB re 1 V μPa^{-1}; 0.02–125 kHz frequency range) at 2–3 m depth connected to a data logger (RTsys, Caudan, France). Recordings of a seismic array (4450 cubic inches) in the Santos Basin, Brazil, were made 329 m from the sound source (closest distance of a towed array which passed the hydrophone) using a hydrophone (Seiche; manufacturer-calibrated sensitivity −201 dB re 1 V μPa^{-1}; frequency range 0.01–200 kHz) connected to a digital recorder (RME Fireface 800, 48 kHz sampling rate: Haimhausen, Germany). All recordings were made during still-to-moderate wind speeds.

For each of the four sound types (recordings of ambient, ship, pile-driving and seismic noise), two sets of playback tracks were made: one set (three of each sound type) for use in short-term experiments and one set (six of each sound type) for use in long-term experiments. The use of multiple tracks for each sound type and time frame reduced issues of pseudoreplication. Short-term experimental tracks were all 5 min in duration. For ambient and pile-driving playbacks, a random part of the relevant recording was used; for ship and seismic playbacks, the chosen 5 min was from the maximum amplitude period of the recording (i.e. when the vessel was closest to the hydrophone).

The composition of playback tracks for the long-term experimental tanks differed between treatments to reflect the four acoustic scenarios (see Figs S1 and S2). Each ambient-noise tank was allocated a unique combination of four of six possible 1-h coastal recordings that played on a continuous shuffled programme. Each ship-noise tank was allocated a unique combination of four of six possible 1-h tracks, which each had a single 15-min ship pass starting at 20 or 40 min (5-min fade in, 5-min full amplitude and 5-min fade out) and ambient noise in between; by randomly shuffling the tracks, ship passes were 25, 45 or 65 min apart to avoid predictability. Each tank with pile-driving playback was allocated a unique combination of four of six possible 6-h tracks, with 4 h of 'constant' pile-driving (one strike approx. every 1.5 s with ambient noise between strikes) and 1 h of ambient noise at the start and finish; on a random shuffle, this gave 2 h of ambient noise followed by 4 h of pile-driving on a continuous cycle. Each seismic-noise tank was allocated a unique combination of four of six possible 2-h tracks, which each had 1 h of 'constant' airgun noise (a ship approaching and passing, towing a seismic airgun which let off blasts once every 12 s) and 1 h of ambient noise in either order; by randomly shuffling the tracks, seismic survey noise could play for 2 h continuously or have a 1- or 2-h period of ambient noise in between periods of seismic noise.

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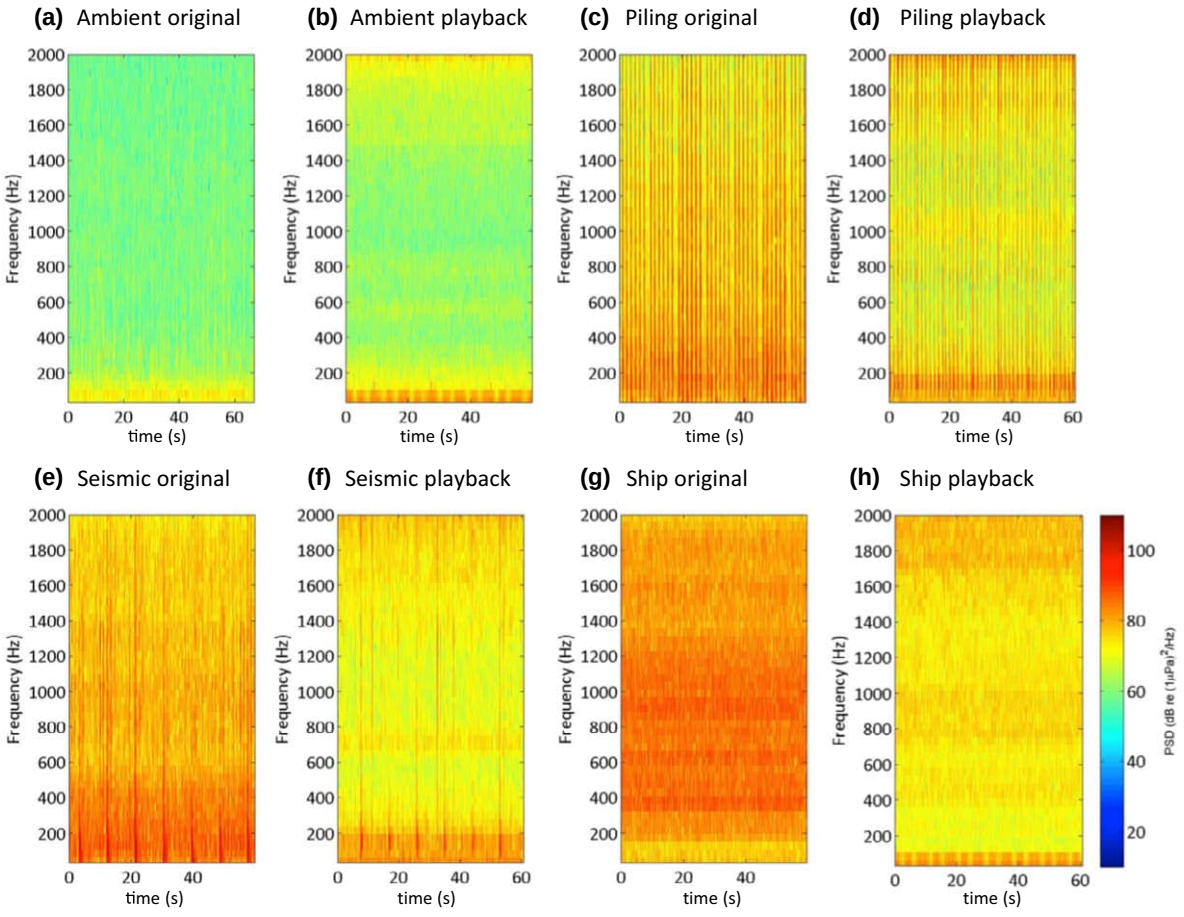

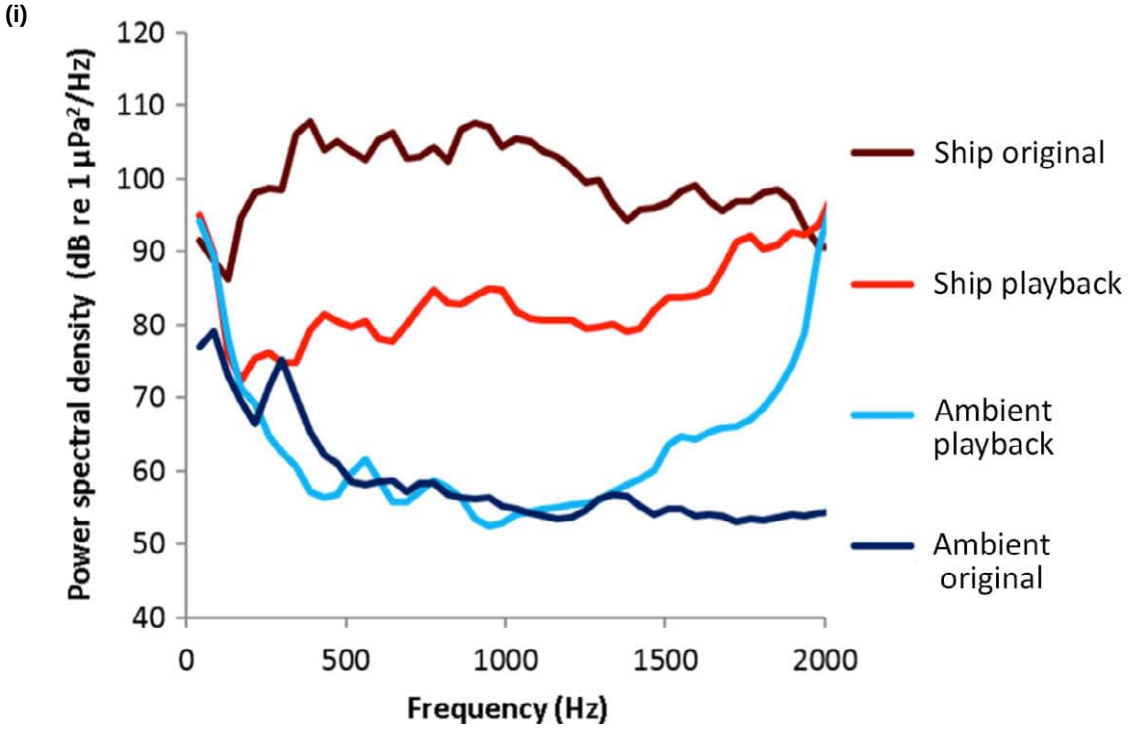

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Playbacks were via underwater loudspeakers (UW-30; max output level 156 dB re 1 μPa at 1 m, frequency response 0.1–10 kHz; University Sound, Whitehall, Ohio, USA) resting on a foam base at the bottom of the tank and facing upwards. Recordings of playbacks in stock tanks were made in the centre of the tank and 45 cm above the tank floor, using the same hydrophone as for ambient and ship recordings and a digital recorder (Sony PMC-M10, 44.1 kHz sampling rate, Sony Corporation, Tokyo, Japan). Due to unresolved challenges in measuring particle motion in small tanks at the time of the experiments, we assessed acoustic conditions in the pressure domain only. In this study, we do not attempt to establish absolute values for sensitivity, but rather explore the potential for animal responses to change as a consequence of repeated exposure to additional noise of different sound types.

Acoustic analysis

Sound recordings were analysed in MATLAB 2013a using the analysis package from Merchant *et al*. (2015). Recordings were low-pass filtered at 2 kHz prior to analysis to focus on the frequencies of most likely relevance (those below 1 kHz) to seabass hearing (Lovell, 2003). Spectrograms and power spectral densities (see Fig. 1) were calculated using a window length of 1024 over a 1-min recording. Root-mean-squared (RMS) levels and consistency at 130 and 140 dB for all treatments, and peak levels for ambient and ship treatments, were calculated over 1-min samples. Peak levels, 90% energy envelope, rise time and single-strike sound-exposure level (SELss) were averaged over five different randomly selected impulses for pile-driving and seismic treatments.

Experimental design

Our focus in this study was the effect of repeated exposure to additional noise; comparisons were made with individuals from the same cohort from the same holding conditions that experienced control playbacks (of recordings of ambient coastal noise) and so any treatment-based effect is not the consequence of captive conditions *per se*. Individual seabass were tested once in an independent-samples design; different cohorts were used for the two experimental sets. Both experimental sets constituted three phases (short-term experiment, long-term experiment and coupled short-term experiment). In experimental set 1 (January–April 2014), we compared responses to an impulsive sound type (playback of recordings of pile-driving noise) with a more continuous sound type (playback of recordings of ship noise); playback of recordings of ambient coastal noise was used as a control. In experimental set 2 (June–September 2014), we compared responses to two different impulsive sound types (playback of recordings of pile-driving and seismic noise); playback of recordings of ambient coastal noise was again used as a control.

Phase 1: Short-term experiment. To test the immediate effect of a single short-term exposure to additional noise, we used a physiological measure because changes in behaviour do not always provide a sufficiently sensitive or timely indicator of a response to a stimulus (Beale & Monaghan, 2004). Specifically, we considered ventilation rate (measured as opercular beat rate; OBR). Ventilation rate is a recognized secondary indicator of stress (Barton, 2002), is a robust measure allowing control for the baseline OBR of individual fish in a matched design, is easily measured by an observer who is blind to the acoustic experience of each fish and has previously been shown to be affected by anthropogenic noise (Simpson *et al*., 2015; Bruintjes *et al*., 2016).

Postlarval seabass were tested within 1 week of arrival at the experimental laboratory, having been exposed to no playback tracks previously; they had been kept in stock conditions exposed only to tank noise. For testing, individual seabass were placed into plastic containers (height: 12 cm; width: 13 cm; length: 18.5 cm; wall thickness: 1.5 mm; water volume: 280 ml) inside a glass test tank (height: 32.5 cm; width: 32 cm; length: 63 cm; wall thickness: 3 mm; water volume: 60 L) at a fixed location 30 cm from a sideward-facing loudspeaker (details above) suspended at one end. Seabass were allowed to settle for 2 min while an ambient track was playing. An observer then counted opercular beats for 1 min. If opercular beats could not be observed, counting was paused; for every individual tested, a full 1 min of beats was counted (always within 90 s). There was then a switch to the designated experimental track (one of the three sound types, including ambient, for that experimental set), and 1 min of opercular beats was counted as before. Time was monitored and the track was switched by a second observer.

The tubes were cleaned and the water replaced with fully aerated saltwater after each seabass (to prevent any accumulation of stress hormones), and we tested fish in five blocks of 18 individuals in each experimental set. Within each block, equal numbers of fish received the three experimental sound types, with order randomly allocated within each block; subsequent analysis confirmed that this did not result in any chance bias in the ordering of different sound treatments (Kruskal–Wallis tests on ranked orders: all $P > 0.118$). Following OBR counting, all tested fish were weighed using a G&G GmbH pocket

Fig. 1 (a–h) Illustrative spectrograms of the four sound types used in the experiments, showing both examples from an original recording and from the recording of playback in one of the long-term exposure tanks. (i) Power spectral densities of sound pressure levels from recordings of original ambient and ship conditions and playback of those recordings in a long-term exposure tank. Playbacks were affected by near-field effects, and speaker performance meaning some frequencies were louder and others quieter, but ships were louder than ambient noise and ship-noise playbacks were louder than ambient-noise playbacks. Sounds <10 Hz are unlikely to be generated by the speakers, but may result from, for example, background pump noise or vibrations in the experimental laboratory. The higher levels at >1500 Hz for ambient-noise playbacks compared to original ambient-noise recordings likely result from background noise, the resonant frequency of the tank, and the frequency response of the playback set-up.

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scale (Neuss, Germany) and measured (standard length; 15 cm metal ruler).

Phase 2: Long-term experiment. One hundred and fifty post-larval seabass were placed in each of nine stock tanks for each experimental set. The three sound treatments in a given experimental set were assigned to three stock tanks each; tanks contained an upward facing loudspeaker (details above). Fish were kept in the stock tanks for 12 weeks, throughout which the relevant noise was played on a continuous randomized cycle (see Sound recordings and playback tracks). Feeding, water temperature, lighting conditions and recirculation were as per general husbandry (see Holding conditions). Each week, 40 fish were temporarily removed from each tank for weighing (30 fish in three groups of 10; Ohaus Valor 300 series scale, Parsippany, USA) and measuring (10 fish individually for standard length; 15 cm ruler); fish were immediately replaced in their stock tank afterwards. Each week, the number of deaths per tank was also recorded; dead fish were removed daily.

Phase 3: Coupled short-term experiment. At the end of the 12-week sound exposure, subsets of fish from each tank were tested for their response to short-term exposure to one of the different sound treatments in that experimental set using ventilation rate as the response measure (same general methods as for the short-term experiment). For each fish, the initial playback period (counting of baseline OBR) was of their home-tank track, with a switch to a different track from one of the three sound types for the second period of OBR counting. Thirty fish from each of the nine tanks were tested; 10 each with one of the three sound types as the experimental track. Fish were tested in 10 blocks of 27 fish (one each of fish from every stock tank and all three sound types) in each experimental set. The order of testing within blocks was randomized; subsequent analysis confirmed that this did not result in any chance bias in the ordering of different sound treatments (Kruskal–Wallis tests on ranked orders: all $P > 0.740$). Following OBR counting, all tested fish were weighed and measured (as in the short-term experiment).

Statistical analysis

All data were analysed using SPSS version 21 (IBM Corp., Armonk, NY, USA). For all tests, normality of residuals and heteroscedasticity of variances was checked and parametric tests (on raw or transformed data) or nonparametric tests conducted as appropriate (details below). In all analyses, interactions between fixed terms were checked but never found to be significant and so are not presented in the Results.

To analyse OBR data from the short-term experiments, general linear models (GLMs) were used, with the change in OBR from initial ambient playback period to experimental playback period included as the response measure. We controlled for testing block and fish size (model outputs are presented throughout the Results using length measurements, but qualitatively the same findings were apparent if mass was used), while examining the effect of experimental sound treatment (experimental set 1: ambient, ship, pile-driving; experimental set 2: ambient, pile-driving, seismic).

To analyse all other data sets, we used mixed models to control for the testing of multiple fish from the same stock tanks, which are not therefore independent. For the long-term experimental data, we controlled for fixed effects of testing block and fish size, along with random effect of tank identity, while examining the effect of sound treatment. In the case of fish growth, we ran separate linear mixed models (LMMs) for mass (square-root-transformed) and length. We ran generalized linear mixed models (GLMMs) with a Poisson distribution and a logit link function to consider weekly counts of dead fish.

We also used mixed models to consider data from the coupled short-term experiments, examining how fish that had been exposed to 12 weeks of a given sound treatment responded to a short-term exposure to that sound or a different sound type. To determine the baseline OBR of fish from different rearing conditions, the OBR in the initial playback period (home-tank noise) was used as the response variable. The change in OBR from initial playback period to experimental playback period was used as the response variable in other analyses. In each case, we controlled for the fixed effects of testing block and fish size (as above), as well as the random effect of home-tank identity.

Results

Acoustics

Ambient playbacks had the lowest RMS level and consistency at 130 dB, followed by ship, seismic and pile-driving playbacks, respectively (Table 1). Impulsive pile-driving playbacks had a 90% energy envelope 72 times shorter and rise time two times shorter than impulsive seismic playbacks (Table 1). The peak levels and SELss of pile-driving playbacks were 4–5 dB higher than seismic playbacks (Table 1). Playbacks differed to original recordings because of the frequency response of the loudspeakers used, near-field effects and interference due to the unavoidable reflections and reverberations within tanks (see Fig. 1 for a comparison of the power spectral densities of original and played-back ambient and ship noise).

Experimental set 1

Sound treatment had a significant effect on the OBR of naïve postlarval seabass (GLM: $F_{2,82} = 8.85$, $P < 0.001$; Table S1). Short-term exposure to pile-driving noise resulted in a significantly greater increase in OBR than short-term exposure to either ambient noise or ship noise; there was no significant difference in the OBR change exhibited by fish exposed short-term to ambient or ship noise (Fig. 2a).

Following 12 weeks of exposure to ambient noise, seabass still exhibited the same significant difference in

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Table 1 Acoustic comparisons of playback tracks used in long-term experiments. Sound recordings were analysed in MATLAB 2013a using the paPAM analysis package (Merchant *et al.*, 2015); full details provided in main text

Noise playback	RMS level (60s) (dB re 1 μPa)	Consistency at 130 dB	Consistency at 140 dB	Peak level (dB re 1 μPa)	90% energy envelope (ms)	Rise time (ms)	SELss (dB re 1 μPa^2*s)
Ambient	117.23	0.65	0.00	141.20	NA	NA	NA
Ship	124.71	6.53	0.00	138.63	NA	NA	NA
Pile-driving	146.66	25.49	7.72	163.31	142.65	39.10	147.40
Seismic	131.54	11.91	0.28	158.39	10285.30	77.51	143.48

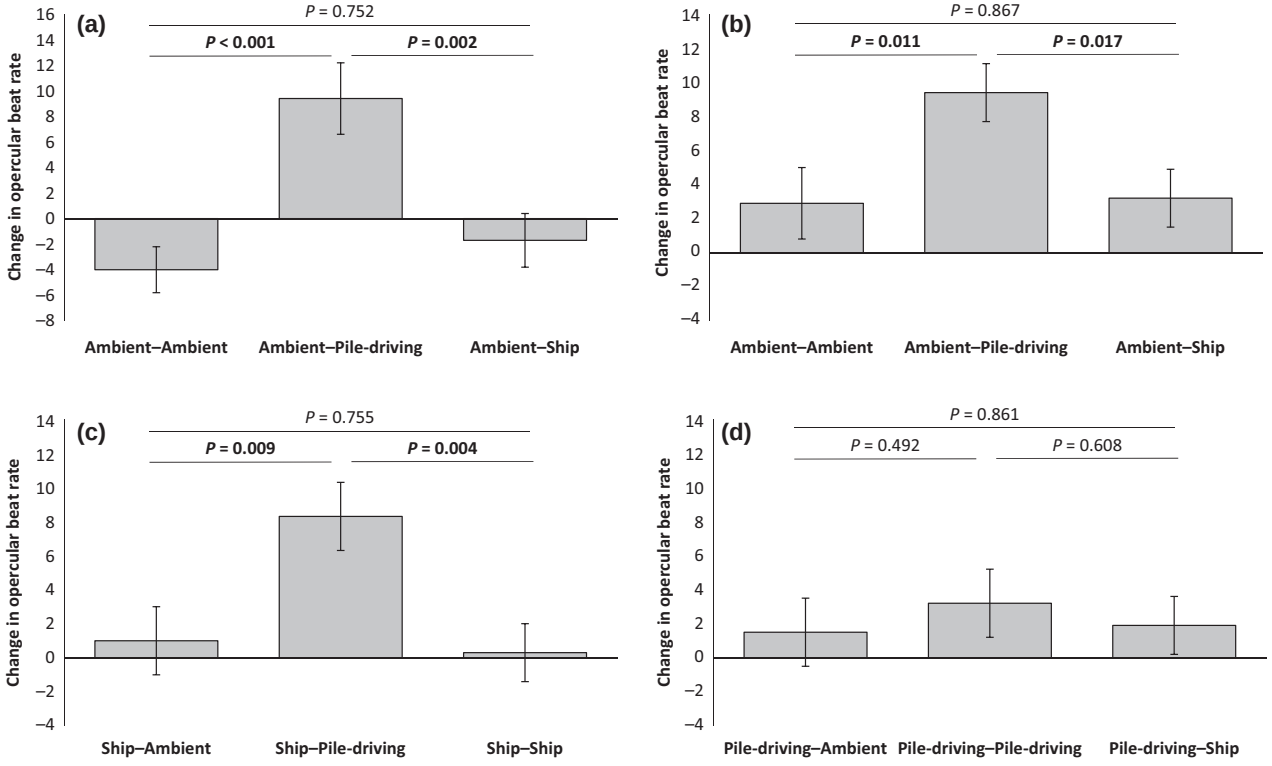

Fig. 2 Change in opercular beat rate of seabass in experimental set 1 during two consecutive short-term (2 min) exposures to playback of recordings of different sounds (ambient noise, pile-driving noise or ship noise). In (a) are responses of 'naïve' (no prior experience of playbacks) postlarval individuals to ambient-noise playback followed by playback of one of the three sounds (n = 90 evenly spread between the three treatments). In (b–d) are responses of individuals that have experienced 12 weeks exposure to ambient-noise playback, pile-driving-noise playback or ship-noise playback, respectively; testing involved a change from playback of the long-term noise exposure to a different playback track (n = 90 evenly spread between treatments in each case). Shown in all cases are means ± SE, with the significance of pairwise *post hoc* tests indicated above bars (significant results in bold).

response to the short-term sound treatments (LMM: $F_{2,70.2}$ = 4.22, P = 0.019; Table S2a): fish reared in ambient noise exhibited a significantly greater increase in OBR when exposed in the coupled short-term experiment to pile-driving noise compared to either ambient noise or ship noise; there was no significant difference in the OBR change exhibited by ambient-reared fish exposed short-term to ambient or ship noise (Fig. 2b). Qualitatively similar results were obtained for seabass reared in ship noise, with the coupled short-term sound treatment having a significant effect on OBR change ($F_{2,73}$ = 5.39, P = 0.007; Table S2b): fish reared in ship noise showed a significantly greater increase in OBR in response to short-term pile-driving noise compared to either ambient noise or ship noise; there was no significant difference in the OBR change exhibited by ship-reared fish exposed short-term to ambient or ship noise (Fig. 2c). However, a different result was found for seabass reared in pile-driving noise as these individuals exhibited no significant difference in response to

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subsequent short-term exposure to different sound treatments ($F_{2,74.9} = 0.26$, $P = 0.773$; Table S2c). For these fish, short-term pile-driving noise did not result in a significantly different change in OBR compared to short-term ambient or ship noise (Fig. 2d).

Fish from the three long-term sound-exposure treatments did not differ significantly in their baseline OBR (LMM: $F_{2,234} = 0.29$, $P = 0.761$; Table S3a). Nor was there any significant difference in the growth rates (length: $F_{2,1070} = 0.67$, $P = 0.544$; Table S3b; mass: $F_{2,314} = 0.30$, $P = 0.752$; Table S3c) or mortality rate (GLMM: $F_{2,92} = 1.21$, $P = 0.228$; Table S3d) of fish in the three long-term sound-exposure treatments.

Experimental set 2

Sound treatment had a significant effect on the OBR of naïve postlarval seabass (GLM: $F_{2,82} = 20.37$, $P < 0.001$; Table S4). Short-term exposure to both pile-driving and seismic noise resulted in a significantly greater increase in OBR than short-term exposure to ambient noise; there was no significant difference in the OBR change exhibited by fish exposed short-term to pile-driving and seismic noise (Fig. 3a).

Following 12 weeks of exposure to ambient noise, seabass still exhibited the same significant difference in response to the short-term sound treatments (LMM: $F_{2,77} = 12.10$, $P < 0.001$; Table S5a): fish reared in ambient noise exhibited a significantly greater increase in OBR when exposed in the coupled short-term experiment to either pile-driving or seismic noise compared to ambient noise; there was a strong, but statistically nonsignificant trend for a greater increase in OBR in response to short-term pile-driving compared to seismic noise (Fig. 3b). Seabass exposed to 12 weeks of seismic noise also exhibited a significant difference in OBR response depending on sound treatment in the coupled short-term experiment ($F_{2,77} = 16.44$, $P < 0.001$; Table S5b). However, the difference here was that seismic-reared fish did not exhibit a significant difference in OBR change when exposed to either short-term ambient or seismic noise, but still exhibited a

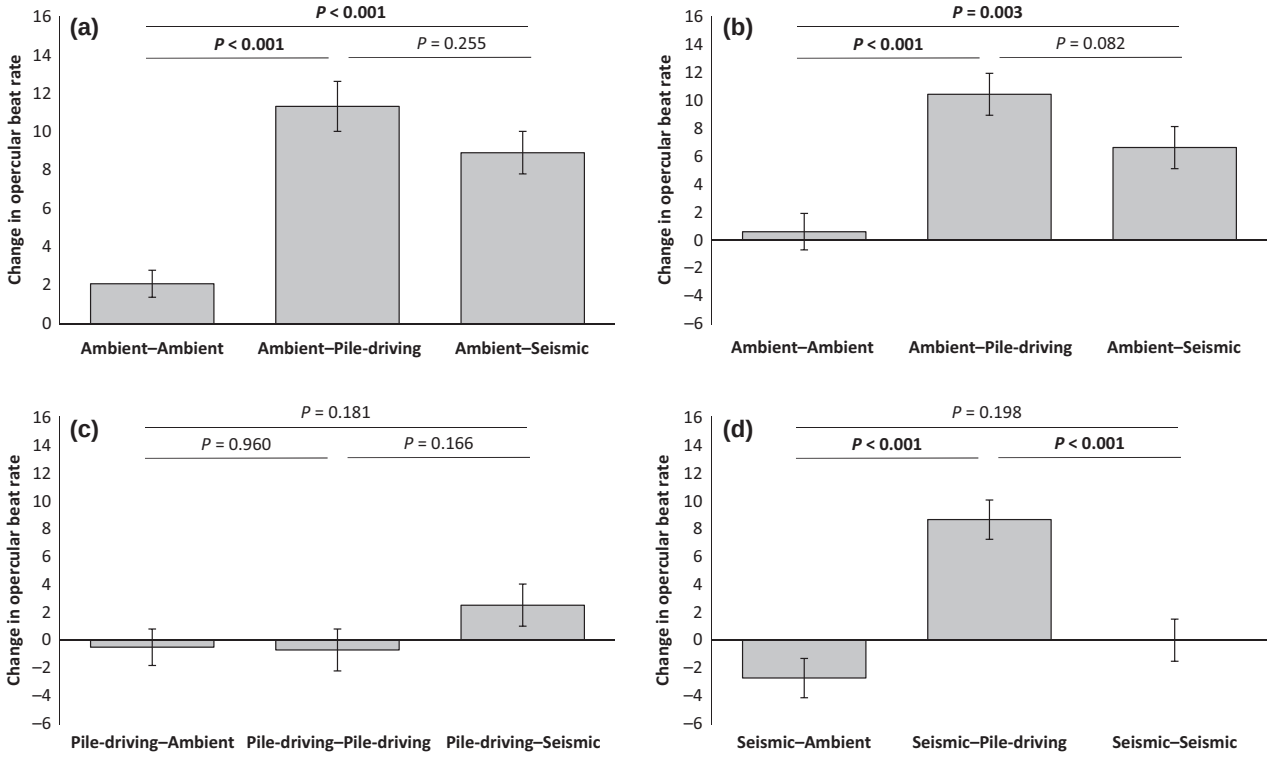

Fig. 3 Change in opercular beat rate of seabass in experimental set 2 during two consecutive short-term (2 min) exposures to playback of recordings of different sounds (ambient noise, pile-driving noise or seismic noise). In (a) are responses of 'naïve' (no prior experience of playbacks) postlarval individuals to ambient-noise playback followed by playback of one of the three sounds ($n = 90$ evenly spread between the three treatments). In (b–d) are responses of individuals that have experienced 12 weeks exposure to ambient-noise playback, pile-driving-noise playback or seismic-noise playback, respectively; testing involved a change from playback of the long-term noise exposure to a different playback track ($n = 90$ evenly spread between treatments in each case). Shown in all cases are means ± SE, with the significance of pairwise *post hoc* tests indicated above bars (significant results in bold).

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significantly greater increase in OBR when experiencing short-term exposure to pile-driving noise (Fig. 3c). Seabass exposed to 12 weeks of pile-driving noise showed no significant difference in OBR response to the three sound treatments in the coupled short-term experiment (LMM: $F_{2,77} = 1.26$, $P = 0.290$; Table S5c). That is, these fish not only showed no significantly greater increase in OBR in response to short-term pile-driving noise compared to short-term ambient noise, but also exhibited no significantly different response to short-term seismic noise compared to ambient noise (Fig. 3d).

Fish from the three long-term sound-exposure conditions did not differ significantly in their baseline OBR (LMM: $F_{2,251.0} = 1.32$, $P = 0.337$; Table S6a). Nor was there any significant difference in the growth rates (length: $F_{2,1160} = 0.39$, $P = 0.691$; Table S6b; mass: $F_{2,341} = 0.21$, $P = 0.979$; Table S6c) or mortality rate (GLMM: $F_{2,101} = 0.89$, $P = 0.371$; Table S6d) of fish in the three long-term sound-exposure conditions.

Discussion

Naïve seabass exposed to impulsive sounds (playbacks of recordings of pile-driving and seismic surveys), but not a more continuous sound type (playback of recordings of ship noise), responded with an elevated OBR relative to control individuals exposed to ambient-noise playback. An increased ventilation rate in response to additional noise (see also Simpson *et al*., 2015; Bruintjes *et al*., 2016) is indicative of increased stress (Barton, 2002). However, rearing in impulsive-noise conditions for 12 weeks resulted in a lessened OBR response to additional noise; fish reared with seismic-noise playback exhibited a reduced response just to that sound type, but fish reared with playback of pile-driving noise exhibited a reduced response to both pile-driving and seismic-noise playbacks. This is strong experimental evidence that the response to noise can change with repeated exposure. Given this lessened response, it is perhaps not surprising that fish reared in different sound treatments did not differ in their baseline stress levels (as indicated by ventilation rate), growth at 12 weeks or mortality. These findings demonstrate why caution is needed when drawing conclusions about fitness consequences from single short-term experiments (see also Bejder *et al*., 2006). Such conclusions may be accurate if considering responses with immediate fitness outcomes, such as antipredator behaviour (see Wale *et al*., 2013b; Simpson *et al*., 2015, 2016), but are not necessarily so if there is a chance for animals to compensate over time.

The documented lessening of response to impulsive noise could theoretically arise from mortality of the most susceptible individuals, leaving only those with high initial tolerance for testing at the end of the exposure period. Intrapopulation variation in vulnerability to noise is certainly expected with respect to, for example, sex, age, size and condition (Wale *et al*., 2013a; Radford *et al*., 2015), but mortality rates in the current experiments were generally low (mean: 10% in 12 weeks) and deaths in all sound treatments were similar. In our tank-based set-up, there was also no possibility for less tolerant individuals to move away; there was no likelihood that our comparison at the start and end of the noise-exposure period was of different cohorts of individuals (cf., e.g. Thompson *et al*., 2013). Nor can changes in response be the indirect consequences of noise effects on other species with which the focal animals interact (see Bejder *et al*., 2009) because seabass were reared alone in the experimental tanks. There remain, therefore, two potential explanations for the reduced response with repeated impulsive-noise exposure: a change in tolerance or a shift in hearing threshold.

Increased tolerance can arise from habituation, a learned reduction in response to a stimulus as organisms come to realize that it does not have detrimental consequences (Bejder *et al*., 2009). Development of increased tolerance has previously been shown in other contexts (Ellenberg *et al*., 2009; Ensminger & Westneat, 2012; Viblanc *et al*., 2012), but rarely considered with respect to anthropogenic noise (see Nedelec *et al*., 2015, in press). Such a lessening of response has implications for the projected impacts of anthropogenic noise. It has often been suggested in studies looking at single short-term noise exposures that there could be lasting consequences of the effects seen. But, if increased tolerance can develop, and if it can do so relatively quickly, then there may be a reduced likelihood of negative fitness consequences (see also Bejder *et al*., 2006). Certainly, we found no evidence for any effect on mortality or growth after 12 weeks of exposure, even for the impulsive sounds that had the largest short-term impact. The lack of an effect on growth after a few weeks of exposure is in line with most previous work exploring the impacts of anthropogenic noise on fish (Wysocki *et al*., 2007; Bruintjes & Radford, 2014; Nedelec *et al*., 2015, in press; but see Anderson *et al*., 2011). If growth had been affected earlier on (see Davidson *et al*., 2009; Nedelec *et al*., 2015), catch-up growth can be detrimental to fitness due to oxidative stress (Lee *et al*., 2013), but there appeared to be no treatment-based effects on growth at any stage in the experimental exposure period. However, there could have been other effects that we did not measure, such as on telomere length (see Meillère *et al*., 2015).

Previous work on fish hearing has shown evidence for a noise-induced temporary threshold shift (TTS) in

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some species (Scholik & Yan, 2001; Popper *et al.*, 2005; Wysocki *et al.*, 2007). Further studies to determine the hearing thresholds of seabass at low frequencies (cf. Lovell, 2003) and to assess whether the sound levels in the current experiment could induce TTS in the study species are needed. However, if TTS is the explanation for the demonstrated reduction in response to impulsive sound types following long-term exposure, then the implications differ somewhat compared to if an increased tolerance is the underpinning mechanism. In both cases, any initial increases in stress or distraction caused by additional noise are likely to be lessened over time (see above). But, TTS could have the knock-on consequences of a reduced responsiveness to other, useful, sounds such as the acoustic cues and signals cues used by many fishes for orientation and settlement, detection of predators and prey, and for communication (Popper *et al.*, 2003; Radford *et al.*, 2014).

The acoustic properties of impulsive playbacks may affect the development and generalization of a reduced response, because exposure to playbacks of recordings of seismic surveys resulted in a lessened impact of just that sound type, but exposure to playbacks of recordings of pile-driving led to a reduced response to both that sound type and of seismic-noise playbacks. RMS level, consistency at 130 dB, peak level and number of exposures per minute were all higher for pile-driving than seismic playbacks. Rise time and 90% energy envelopes also differed between the two impulsive experimental sounds, being shorter for pile-driving than seismic playbacks. These acoustic properties may have meant that pile-driving playbacks were more startling or aversive, or more likely to generate a TTS, than seismic playbacks (Gotz & Janik, 2010). The frequency content of impulsive playbacks may also have affected responses to them; it is possible that pile-driving playbacks were louder at frequencies that were in the range of best hearing in the seabass than seismic playbacks, meaning an increased perceived loudness of pile-driving playback. Increased tolerance or a greater hearing threshold shift to the more startling or aversive sound stimulus (pile-driving playback) may have resulted in the generalization of reduced responsiveness to include the less startling or aversive sound stimulus (seismic playback).

Tank-based playback experiments allow valuable assessment of principles relating to the impact of sound stimuli, variation in responses dependent on differing acoustic properties and the potential for changes in responses (Radford *et al.*, 2015; Slabbekoorn, 2015). Recent work has also demonstrated qualitatively similar findings from experiments involving the exposure of fish to playbacks of anthropogenic noise in tanks and experiments involving the exposure of fish in open-water conditions to real anthropogenic-noise sources (Simpson *et al.*, 2016). However, it is important to remember that there are both behavioural and acoustic limitations to tank-based playback experiments, including that the speakers do not generate sound in the lowest frequency ranges, that experiments are conducted in the near field and that the sound field, especially in the particle motion domain, will differ compared to that in open-water conditions (Rogers, 2015; Slabbekoorn, 2015). In our experiments, the ambient-noise (control) treatment was also relatively loud (mean RMS level (60s) = 117.23 dB re 1 μPa; Table 1), in comparison with measurements of real ocean noise (e.g. Andrew *et al.*, 2011). This is likely due to noise from, for example, the pumps required to keep fish alive during the 12-week exposure period, and hence also explains the louder conditions compared to previous laboratory-based, short-term exposure experiments conducted in tanks without pumps (e.g. Simpson *et al.*, 2015). However, since we still find a significant effect of the impulsive sound types (playback of recordings of pile-driving and seismic noise) compared to playback of ambient-noise recordings, and since fish exposed long term to these control conditions still exhibited the same responses as 'naïve' fish to short-term exposure to the impulsive sound types, we believe our results are conservative; an even larger difference might have been expected if the control conditions were quieter.

If absolute measures of the impact of particular noises or dose-dependent responses are required for management decisions by regulators, then experiments in natural conditions with real-world noise sources are required. Those are much more logistically challenging (but see Debusschere *et al.*, 2016), especially with respect to controlled long-term exposure experiments as presented here. Future work also needs to tease apart potential underpinning mechanisms for a change in response; in the case of the reduction in response documented here, that would mean examining which of TTS or increased tolerance plays the key role. For now, the current work provides strong empirical evidence of the need for repeated- or chronic-exposure experiments because short-term experiments do not necessarily provide a complete picture of responses and do not reflect most anthropogenic-noise scenarios in the natural world.

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Supporting Information

Additional Supporting Information may be found in the online version of this article:

Figure S1. Example 6-h programmes of three acoustic treatments in each of the nine tanks during long-term experimental playback in Experimental Set 1.
Figure S2. Example 6-h programmes of three acoustic treatments in each of the nine tanks during long-term experimental playback in Experimental Set 2.
Table S1. Experimental Set 1 GLM examining how short-term exposure to three sound treatments (ambient-noise playback, ship-noise playback and pile-driving-noise playback) affect the change in ventilation rate of 'naïve' post-larval seabass (n = 90).
Table S2. Experimental Set 1 LMMs examining how the ventilation rate of juvenile seabass reared in three different long-term (12 week) noise-exposure conditions – (a) ambient-noise playback, (b) ship-noise playback, (c) pile-driving-noise playback – is affected by short-term exposure to playback of one of the same three noise treatments (n = 90 in each long-term cohort).
Table S3. Experimental Set 1 mixed models examining how long-term (12 week) exposure to one of three sound treatments (ambient-noise playback, ship-noise playback, pile-driving-noise playback) influences juvenile seabass (a) baseline ventilation rate (LMM; n = 270 fish), (b) length (LMM; 1080 measurements), (c) mass (LMM; 324 measurements), and (d) mortality (GLMM; 99 weekly counts).
Table S4. Experimental Set 2 GLM examining how short-term exposure to three sound treatments (ambient-noise playback, seismic-noise playback and pile-driving-noise playback) affect the change in ventilation rate of 'naïve' post-larval seabass (n = 90).
Table S5. Experimental Set 2 LMMs examining how the ventilation rate of juvenile seabass reared in three different long-term (12 week) noise-exposure conditions – (a) ambient-noise playback, (b) seismic-noise playback, (c) pile-driving-noise playback – is affected by short-term exposure to playback of one of the same three noise treatments (n = 90 in each long-term cohort).
Table S6. Experimental Set 2 mixed models examining how long-term (12 week) exposure to one of three sound treatments (ambient-noise playback, seismic-noise playback, pile-driving-noise playback) influences juvenile seabass (a) baseline ventilation rate (LMM; n = 270 fish), (b) length (LMM; 1170 measurements), (c) mass (LMM; 351 measurements), and (d) mortality (GLMM; 108 weekly counts).

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Appendix 9
Popper et al (2014)

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Quo Vadimus

A sound approach to assessing the impact of underwater noise on marine fishes and invertebrates

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Increasing attention is being paid to the ecological consequences of underwater noise generated by human activities such as shipping and maritime industries including, but not limited to, oil and gas exploration and extraction, sonar systems, dredging and the construction of offshore renewable energy devices. There is particular concern over the extension of these activities into previously undeveloped areas of the oceans, including Polar Regions and areas of coral reef habitat. Most of the concern by regulators and others has focussed upon effects upon marine mammals and other protected species. However, examining the impacts upon the overall ecology of affected habitats is also important as it may be dominated by effects upon the far larger biomasses of fishes and invertebrates, which do not have the same degree of legal protection. Many of these assessments of the impact of noise on fishes and invertebrates have overlooked important issues, including the sensitivity of a substantial proportion of these species to particle motion rather than sound pressure. Attempts have been made to establish sound exposure criteria setting regulatory limits to the levels of noise in terms of effects upon mortality levels, injury to tissues, hearing abilities, behaviour, and physiology. However, such criteria have almost exclusively been developed for marine mammals. Criteria for fishes and invertebrates have often had to be assumed, or they have been derived from poorly designed and controlled studies. Moreover, the metrics employed to describe sounds from different sources have often been inappropriate, especially for fishes, and invertebrates, as they have been based on sound pressure rather than particle motion. In addition, the sound propagation models employed to assess the distances over which effects might occur have seldom been validated by actual measurements and are especially poor at dealing with transmission under shallow water conditions, close to or within the seabed, or at the surface. Finally, impacts on fish and invertebrate populations are often unknown and remain unassessed. This paper considers the problems of assessing the impact of noise upon fishes and invertebrates and the assessment procedures that need to be implemented to protect these animals and the marine ecosystems of which they form an integral part. The paper also suggests directions for future research and planning that, if implemented, will provide for a far better scientific and regulatory basis for dealing with effects of noise on aquatic life.

Keywords: airgun, criteria, fish, ground roll, invertebrate, noise, particle motion, pile driving, regulation, seismic, shipping, sonar, sound.

Introduction

Underwater sounds, especially those affecting marine animals, cannot easily be heard from above the waves, leading to the often-held assumption that the seas are silent. In fact, sound is very important to marine animals. It offers unrivalled advantages for fast, directional, and long distance information transmission especially in an optically poor medium like water (Urick, 1983; Kinsler *et al.*, 1999). Sound propagates through water almost 4.5 times faster than in air (Urick, 1983). Long wavelength, low frequency sounds are relatively unaffected by absorption, scattering and reflection and may travel tens of kilometres, depending on local environmental conditions (Rogers and Cox, 1988).

In considering the various sensory channels through which aquatic animals might learn about their environment, it becomes apparent that sound provides information that is more rapidly communicated, gives directional cues, and is least affected by environmental variables (e.g. presence of light, currents) than any other signal source (e.g. vision, touch, chemical senses) (Tavolga,

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Table 1. Selected resources for background on aspects of this paper.

Conference proceedings that cover topics broadly	Normandeau, 2012a, b; Popper and Hawkins, 2012, 2016
Use of sound by fishes and invertebrates	Tavolga, 1971; Myrberg, 1981; Hawkins and Myrberg, 1983; Cotter, 2008; Slabbekoorn *et al*., 2010; Vermeij *et al*., 2010; Stanley *et al*., 2012; Ladich, 2013
Part 1: Underwater acoustics and sound sources	www.dosits.org; Urick, 1983
Part 2: Fish and invertebrate hearing and sound communication	Tavolga, 1971; Hawkins and Myrberg, 1983; Popper *et al*., 2001, 2003; Webb *et al*., 2008; Ladich and Fay, 2013; Ladich, 2014
Part 3: Assessing effects	Normandeau, 2012a; b; Hawkins and Popper, 2014; Popper *et al*., 2014; Hawkins *et al*., 2015; Edmonds *et al*., 2016; Lucke *et al*., 2016a

1965, 1971; Hawkins and Myrberg, 1983; Hawkins, 1986). Accordingly, hearing is the main distance sense for aquatic vertebrates, and it is likely to be so for many aquatic invertebrates as well. (While this paper focuses on the marine environment because of its economic importance, most of the findings and ideas discussed here are equally applicable to all aquatic environments including rivers, harbours, lakes and streams.) Marine (and terrestrial) animals assess the environment around them by analysing the soundscape or "acoustic scene" (Popper and Fay, 1997; Fay, 2009). Additionally, fishes and invertebrates may use sound in many ways that parallel the use of sound by marine mammals and terrestrial vertebrates. This includes (but is not limited to): communication with conspecifics; seeking prey and avoiding predators; orientating with respect to environmental features; and locating appropriate habitats. Migratory fishes and perhaps invertebrates, may also navigate using positional cues provided by natural geophysical sources of sound (see general references in Table 1).

Greatest concern is currently directed at examining the effects of underwater man-made sound upon marine mammals (Southall *et al*., 2007; Erbe *et al*., 2016; NMFS, 2016), largely because of the strong legal protection given to these charismatic animals. Much less attention regarding effects of man-made sound has been paid to fishes and invertebrates although these are present in far greater biomasses than marine mammals. Fishes and invertebrates underpin the food webs for marine mammals, reptiles, and seabirds, as well as humans. Moreover, while marine mammals make up perhaps 100 species, there are over 32,000 species of fishes (www.fishbase.org) and a far greater number of marine invertebrate species. Fishes and invertebrates differ substantially from marine mammals in terms of their general biology, swimming abilities, hearing physiology and behaviour, and must considered separately.

Purpose of this paper

To assess the impacts of noise pollution it is necessary to investigate both the generation and propagation of underwater sounds and the stimuli they inflict upon the animals, and also the effects upon animals, in terms of dose response relationships for physical, physiological and behavioural changes. This requires scientific expertise in very different scientific fields. In the past, many assessments of effects and impacts have been based on inadequate information, and in some cases a misunderstanding of factors that are critically important. The intent of this paper is to raise awareness of a number of critical issues regarding the impact of man-made sounds on fishes and invertebrates and to discuss ways in which such impacts should be, assessed in a regulatory context. (In this paper the term sound is used to refer to identifiable man-made sources. The term "noise" is used colloquially to describe unwanted sound that interferes with detection of other sounds of interest. The term background or ambient noise describes naturally occurring sounds from distributed sources.) Although the paper is primarily directed at regulators and those assessing the impact of exposure to underwater sound, many of the points raised are also important for those carrying out research in this field. The main issues are, for the most part, known to some investigators, but not others, as research in this field involves investigators from a wide range of disciplines. These issues are of such importance to regulators, industry, and researchers that they need to be brought together in one place, so that all concerned are better informed.

Thus, this paper should not be viewed as a review of the literature on impacts of man-made sound on aquatic organisms or on basic mechanisms of sound detection and bioacoustic behaviour. Rather, it summarises the critical issues and identifies key knowledge gaps. Readers seeking background material are directed to the references listed in Table 1.

The paper is presented in three inter-related parts. The initial sections (Part 1) discuss the nature of underwater sound, how it is measured, and how it propagates. These sections review a number of critical issues that must be understood in order to assess and regulate underwater sound. They also provide information that is not well understood by some biologists. There is particular focus on the particle motion component of underwater sound since an understanding of particle motion is required in order to understand sound detection and the effects of sound on fishes and invertebrates.

The second set of sections (Part 2) considers sound detection by fishes and invertebrates, again with a focus on detection of particle motion. This is followed by a discussion of assessment of the potential effects of man-made sound on fishes and invertebrates. Here, a lack of field studies of the responses of these animals is holding back progress.

The last sections (Part 3) use the information provided in the earlier part of the paper to discuss assessment of the impacts of underwater sound on fishes and invertebrates, especially in relation to the current regulatory environment.

It should be noted that throughout the paper a number of research projects, adopting new approaches, are suggested. The projects are needed as the basis for far better assessment and regulation of potential effects of man-made sound on fishes and invertebrates. It is clear that undertaking many of these new studies will be very difficult and/or expensive (e.g., observing behaviour of wild fishes in the open ocean). It may not be feasible to carry

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out all these projects, but it is imperative that they be proposed so that regulators and others will understand what needs to be done, and where new funding must be directed.

Assessing the risks to animal populations from sound exposure

Processes for assessing the risks associated with man-made underwater sound involve a number of steps. At the start, it may be necessary to define the key species and species groupings that are likely to be affected by particular sounds. These may be defined in legislation, but perhaps also need to be assessed through a preliminary biological screening process (which might also then drive the species defined in legislation). In an ecological context, it is important to identify those taxa and species that may be especially vulnerable to sound exposure and which also play a key role in local ecosystems. The risk to potentially sensitive species can then be assessed by reviewing the available literature on their hearing abilities and responses to sound, and examining the likelihood of sound exposure resulting in adverse effects.

It is important here to emphasise the distinction between *effects* and *impacts* (Boehlert and Gill, 2010). Effects are the broad range of potentially measurable changes that may be observed in individuals, groups of animals, or even habitats as a result of sound exposure. Impacts are effects that, with some certainty, rise to the level of deleterious ecological significance (Boehlert and Gill, 2010). Thus the effect does not indicate the significance, whereas the impact deals with the severity, intensity, or duration of the effect upon animal populations and ecological communities. Such impacts can then be compared with those resulting from other stressors, including chemical pollution, fishing, pathogens, climate change etc.

To assess likely impacts, scenarios are often constructed, suggesting how animals might respond to sound, and how that response might be mitigated. For example, it might be assumed that there is some movement away from the sound source, disruption of migration patterns or temporary displacement from areas of known concentrations. Mitigation measures might then be proposed, such as time/area closures, establishment of exclusion zones, or ramp up procedures (where the source level is raised gradually). These would be intended to provide protective benefits during exposure, and might ensure that behaviour might return to normal when sound production ceases. Clearly, however, to make such mitigation successful there is a need to know what actually does happen to fishes and invertebrates when they are exposed to sound, the duration of their responses, whether they adapt to the presence of sound, and what the consequences of their responses are for fish and invertebrate populations.

In considering whether there is a need for mitigation, it is important to determine those levels of a sound which might result in adverse impacts upon populations. However, in many circumstances, there may be insufficient information on the population responses of individual species. It may be necessary to undertake a risk assessment, based on expert advice. In some cases, and particularly with especially vulnerable species, it may be necessary to take a precautionary approach; where in the absence of scientific consensus the burden of proof for demonstrating that sound exposure will not be harmful falls upon those making the sounds.

It follows then that the relevance of any assessment depends greatly on the information available on the responses to sound by the exposed animals. However, as assessments of the risks to animals are essentially focused on the impact in terms of long-term population consequences it is not sufficient simply to demonstrate that there will be effects on behaviour, physiology or the reproduction and survival of individuals. Evidence derived from observations on individual animals is important, but must be translated into impacts upon populations.

As well as looking at the initial impact of a particular sound, any assessment must also consider long-term as well as short-term exposure. *Acute exposure* is for a brief period, usually from a particular source. *Chronic exposure* is for longer period and can be the result of cumulative exposure to a repetitive sound source, or aggregate exposure to many different sound sources. Impacts may also involve a variety of other stressors; for example, exposure to fishing or chemical pollution as well as to sound. There are increasing challenges in examining impacts as the pattern of exposure becomes more complex. Aggregate assessments must look at the contribution of the proposed exposure to sound and any additive impacts in relation to other stressors that are present. Sound producing activities may have a much smaller impact upon populations than activities such as fishing, as the latter may result in the removal of large numbers of fish and invertebrates.

Part 1—background on underwater acoustics

The following sections provide a fundamental understanding of underwater acoustics and information about man-made sounds. A number of references that provide a basic background on these topics are provided in Table 1.

The nature of underwater sound

Sound is generated by the movement or vibration of any immersed object in a medium like air or water (Urick, 1983; Kinsler *et al.*, 1999). Sound can be detected: (a) as pressure fluctuations in the medium above and below the local hydrostatic pressure (sound pressure); and (b) by the back and forth motion of the medium, referred to as particle motion (ISO/DIS, 2016).

The sound pressure acts in all directions; it is a scalar quantity that can be described in terms of its magnitude and its temporal and frequency characteristics. Particle motion, in contrast, is an oscillation back and forth in a particular direction; it is a vector quantity that can only be fully described by specifying both the magnitude and direction of the motion, as well as its magnitude, temporal, and frequency characteristics.

A critical issue to understand and appreciate is that while many species of fish (like all marine mammals) are likely to detect sound pressure, particle motion is of very great importance to fishes and invertebrates, especially for locating sound sources through directional hearing (Popper *et al.*, 2014; Hawkins *et al.*, 2015; Nedelec *et al.*, 2016). Indeed, when considering sound detection in most fishes, and probably all invertebrates, in addition to describing the sound pressure environment it is equally or more important to describe the particle motion acoustic environment.

One of the problems in properly describing the overall sound field for fishes and invertebrates (both sound pressure and particle motion) is that whereas there are excellent devices, hydrophones, for detection of sound pressure, there are far fewer devices (and less skill in their use) for detection and analysis of particle motion (Martin *et al.*, 2016). Indeed, detection of particle motion requires different types of sensor than those utilized by a conventional hydrophone. Such sensors must specify the particle

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motion in terms of the particle displacement, or its time derivatives (particle velocity or particle acceleration) in three dimensions.

It has become commonplace to estimate particle velocity from measurements of the sound pressure (e.g. from the sound pressure gradient), using rather simple models (MacGillivray *et al.*, 2004). However, such estimates of sound particle velocity are only valid in environments that are distant from reflecting boundaries and other acoustic discontinuities. Those conditions never prevail in the laboratory. Even in the sea, lakes, and rivers, fishes and invertebrates are often found close to boundaries with media other than water. There are, as yet, few data on the natural levels and directional components of particle motion at different depths and locations in the aquatic environment.

Sources of underwater noise

The sea itself is inherently noisy, with natural sounds emanating from a great variety of sources, both localized and dispersed, including surface waves, turbulence, water flow, seismic disturbances, and sounds of biological origin. Masking of biologically important sounds by ambient noise (particle motion as well as sound pressure for fishes and invertebrates) may well provide the ultimate limit to sound detection for many marine animals (Fay, 2011; Erbe *et al.*, 2016). It has been reported that increasing levels of underwater sound are being generated by man's activities in the oceans (Frisk, 2012; McKenna *et al.*, 2012) and greater attention is now being paid to the ecological consequences of man-made sounds (Kunc *et al.*, 2016; Rossi *et al.*, 2016). There is particular concern over the extension of sound-making activities into previously undeveloped areas of the oceans, including polar and tropical seas.

There are a number of sound sources of particular concern. These will only be mentioned very briefly here, and details can be found in Popper *et al.* (2014) and in the proceedings of two recent conferences (Popper and Hawkins, 2012, 2016). They include: sonar systems for locating the seabed, fishes, and underwater objects (including submarines); seismic airgun arrays used to examine the nature and composition of the substrate beneath the seabed; shipping; inshore and offshore construction technologies including pile driving; the operation of renewable energy devices; and explosions generated by military activities, for scientific purposes, or for the decommissioning of offshore structures. While some man-made sounds are produced intentionally (e.g. naval sonar, echosounders, seismic airgun surveys), other sounds are incidental by-products of other activities (e.g. shipping, dredging, offshore construction, operation of renewable energy devices).

Many of these sound-generating activities are subject to regulatory consenting procedures. National and international jurisdictions require noise impact assessments for developments or activities that have the potential to cause significant adverse impacts on key species and habitats (although these are most often focused on marine mammals). Management of the impact of sound in the oceans must involve the definition of appropriate response thresholds or sound exposure criteria for disturbance; damage to marine life; and harm to marine ecosystems. However, the focus of regulation has often been upon short-term or acute impacts from specific developments. There have been few attempts to evaluate chronic or lasting impacts from the cumulative exposure of ecosystems to raised underwater noise levels, alongside other stressors, perhaps because these are longer-term strategic issues, rather than issues of immediate concern. Also, there are few analytical tools available to conduct such impact analyses.

Metrics for describing underwater sounds

Any effects upon fishes and invertebrates will depend on the characteristics of the sounds to which they are exposed (described by appropriate metrics). Where impact upon biological organisms is an important concern, it is also important to adequately measure and describe the stimuli that the animals will receive and to which they will respond. As well as amplitude levels, expressed in terms of peak or averaged values, the characteristics of the received sound stimulus in terms of parameters like the rise time, duration, repetition rate, and duty cycle are also important. Stimulus characteristics must be defined and metrics chosen in terms of potential effects upon biological receptors.

The choice of metrics to describe underwater sounds can be a major issue in trying to describe and understand the effects of man-made sounds (Ainslie and de Jong, 2016). The metrics applied to continuous sounds (for example, from ships or dredging activities) might include the root-mean-square (rms) sound pressure, peak sound pressure, and, for many fishes and invertebrates, the corresponding sound particle motion in three dimensions. More complex statistical metrics, such as kurtosis (Henderson and Hamernik, 2012) may also be relevant for assessing the "roughness" of continuous sounds.

Impulsive sounds may be expressed in terms of their peak levels. However, peak (and rms) levels are not sufficient for characterizing the energy in short sounds that start and stop, such as those generated by pile-driving strikes or the discharge of seismic airguns. Instead, the use of the sound exposure level (SEL), the time integral of the pressure squared for a single event or strike, has been proposed as a metric for setting criteria for pile driving and other impulsive sounds (Popper and Hastings, 2009). Several papers (Hastings *et al.*, 2005; Southall *et al.*, 2007; Popper and Hastings, 2009; Popper *et al.*, 2014) have advocated the use of both SEL and peak levels and have also emphasized the need to consider the effects of repetition of the impulse and/or the rise time of the signal.

It is evident that assessment of sound-producing activities and their potential for impacting animals has to consider both cumulative effects arising from repetition of sound from a particular source, such as the repeated strikes of a pile driver, and aggregate effects from different types of sources, such as from different pile drivers or from the combined effects of pile driving and shipping. It is necessary to take into account the potential effects not only in terms of exposure to a single sound but to the accumulated energy from exposure to multiple sounds over some specified period of time.

The metric generally used for this is the cumulative SEL (SEL_{cum}), determined at the position of the animal (received level) and not at the source. For pile driving and seismic airguns, this metric can be estimated from the energy in a representative single strike SEL (SEL_{ss}) and the number of strikes. However, this accumulation assumes that all strikes have the same received SEL_{ss} value, something that is rarely the case since the animal or the source are likely to be moving relative to one another. As a consequence, great care must be exercised in employing the SEL_{cum} metric or other averaging metrics as there may be periods

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of high sound exposure interspersed with periods of reduced exposure. Averaging may result in false conclusions on the effects of sound exposure.

Adding to the complexities of using SEL_{cum} is that the actual effects may vary depending on the time between impulses, during which there may be physiological or physical recovery from any effect of a single signal exposure. While there are no experimental data as yet for fishes and invertebrates, such recovery has been identified in noise exposure in marine mammals (Kastelein *et al.*, 2014). Accordingly, it is very likely that the actual effects of exposure to a particular SEL_{cum} of 100 strikes repeated once per second may be very different than the same 100 strikes, with the same SEL_{cum}, repeated every 5 or 10 min.

Recent studies have provided quantitative data to define the levels of impulsive sound that result in the onset of physical injury to fish (Halvorsen *et al.*, 2011, 2012; Casper *et al.*, 2013). From these studies, the investigators were able to reject the hypothesis (referred to as the "equal energy hypothesis") that the same type and severity of injury would occur for the same total energy level of exposure (SEL_{cum}) regardless of how that was reached (e.g. through many low-energy impulsive sounds or fewer high-energy impulsive sounds).

Although the SEL_{cum} is an important metric, the SEL_{ss} and the number of impulses are also important. It has become commonplace for regulators to specify only the SEL_{cum} in setting sound exposure criteria. This is wholly inappropriate (Halvorsen *et al.*, 2011; Popper *et al.*, 2014), as the way the energy is delivered, in terms of both the duty cycle (the proportion of time during which sound is present) and the energy within the individual pulses of sound, will also influence the effects of sound exposure, whether these effects are in terms of injury or behavioural responses.

The propagation of underwater sound

Having defined those noise levels that have particular impacts, it is necessary to estimate the extent of those areas over which those impacts might take place. To assist in assessment of the overall impact of a source of man-made sound, the propagation of sound arising from that source is modelled for a particular environmental scenario, and the potential impact on species of interest is then evaluated, often by defining "zones of influence", based on threshold values above which animals will be adversely affected. Alternatively, it may be possible to estimate how close to a protected species or habitat a particular noise-making activity can take place without adverse impact. Although there is considerable uncertainty in the relationship between sound levels and impacts on aquatic species, the science underlying sound modelling is better understood. Nevertheless, many environmental impact assessments or statements (EIAs or EISs) do not reflect best practice, and stakeholders and decision makers in the assessment process are often unfamiliar with the concepts and terminology that are integral to interpreting sound exposure predictions (Farcas *et al.*, 2016).

Lines drawn on a chart of the sea passing through all points that have the same numerical value of sound level—sound isopleths—are often drawn up by regulators to assess the spatial extent of the likely impacts of sound upon marine animals. In some cases, appropriate propagation models are available and have been applied. Recently, however, Aerts and Streever (2016) have compared modelled and measured sound isopleths for seismic airgun surveys in particular areas and have found poor agreement. Although modelling and measurement occasionally yielded comparable sound levels, the authors concluded that there was little reason to believe that agreement between modelled and measured isopleths would improve unless substantial changes were made to methods, including setting clear standards for the modelling of sound propagation that are applicable in a range of environments from deep oceans to shallow waters.

A particular problem in assessing effects on fishes and invertebrates is that propagation modelling is often carried out in terms of sound pressure rather than particle motion. Moreover, modelling of sound propagation, particularly in relatively shallow waters (in-shore, on reefs, in rivers) must take account of the frequency range of the sound, its temporal structure, water depths (bathymetry), the properties of the adjacent media including the nature of seabed sediments, and water temperature and salinity profiles and it must incorporate both sound pressure and particle motion when considering fishes and invertebrates. Such models do exist, but in many instances have not been utilized.

In order to ensure that the predictions of models are correct, it is necessary to validate them by making field measurements of the sound pressure and particle motion levels at different locations. In practice, sound modelling for EIAs is often carried out using simplistic models, with limited environmental data, and without field measurements to ground-truth the model predictions (Farcas *et al.*, 2016). In some cases, proprietary models are employed, without the assumptions and computational methods being disclosed.

It is also imperative to appreciate that both bathymetry and seabed sediment characteristics strongly influence the propagation of sound in shallow water; especially where the depth is less than the wavelength of sound at the frequencies of interest. At 150 Hz, a frequency to which many fish and invertebrates show high sensitivity, the wavelength is approximately 10 m. In shallow water, there is strong attenuation of sound pressures at lower frequencies (often those within the hearing range of fishes and invertebrates), depending on parameters such as water depth and bottom composition (Rogers and Cox, 1988). This means that even if there is strong low frequency energy in the sound at the source, the sound might not be detectable by a fish or invertebrate sensitive to sound pressure at a distance from the source due to the poor propagation of sound pressure at low frequencies.

However, the effects of propagation upon particle motion in shallow water, or close to the surface or bottom in deeper water, are even more complex (Pangerc and Theobald, 2015). Under shallow water conditions, the repeated reflections and scattering of sound at the seafloor interface and the surface interface may result in strong spatial variations in the amplitude of particle motion and its direction. In addition, depending on the properties of seabed sediments, sound may be transmitted through the seabed and along the seabed interface, to emerge later into the water column. It has been shown that the slow, rolling, interface waves that move out from a source like a pile driver can produce large particle motion amplitudes travelling considerable distances (Hazelwood and Macey, 2016a, 2016b). It is possible that these may affect fishes and invertebrates that dwell close to or within the seabed (Roberts and Breithaupt, 2016; Roberts *et al.*, 2016). However, the presence of such interface waves is often ignored in the preparation in impact assessments.

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With sound propagation modelling there is often particular uncertainty over the characterization of source levels. Many sources of underwater noise are not the point monopole sources that are often assumed. They are large, distributed sources for which detailed noise measurements that include particle motion measurements are rarely available. Such sources include large ships, the airgun arrays used for seismic surveying, pile drivers used in construction activities, wave and tidal energy devices, and operating wind farms.

As a consequence, precisely predicting the sound fields to which fishes and invertebrates are exposed poses formidable difficulties. Although this lack of attention given to particle motion has been pointed out (Popper *et al.*, 2014; Hawkins *et al.*, 2015), few of those responsible for assessing the impact of underwater sounds have taken particle motion into consideration, either in terms of modelling or measuring it.

It is, as discussed earlier, possible to use propagation models to describe the sound pressure component of the sound field and then to extract values of particle motion in the water column from calculation of pressure gradient. However, to do this, there must be sufficient resolution used in the calculation (Robinson *et al.*, 2014) and the boundary conditions must also be taken into account (especially the presence of the seabed and sea surface). However, as a recent workshop concluded (Pangerc and Theobald, 2015):

- Extraction of particle motion from acoustic propagation models is not widespread and not routinely provided as outputs by existing models;
- Modelled results require validation through actual measurements of particle motion; and
- Ocean propagation models are often 'simple' in their representation of the seabed (i.e. often do not support shear forces or consider propagated interface waves), and do not work in shallow water. More detailed models are required. This highlights a further requirement for fully characterising seabed properties to support the modelling.

There is a need for coordinated effort by biologists and physicists to quantify (through both measurement and modelling) particle motion as well as sound pressure in the marine environment in order to assess fully any impacts on fish and invertebrates.

Part 2: bioacoustics

Part 2 provides an overview of hearing by fishes and invertebrates as well as possible effects of man-made sound on these animals. Table 1 provides a number of references as background material.

Hearing abilities of fishes and invertebrates

Determining the sensitivity of animals to sounds of differing characteristics can indicate which particular noise sources are likely to be detected and responded to by fishes and invertebrates and may also indicate the numbers of animals likely to be affected by sound from a particular source, given knowledge of the likely pattern of sound propagation within the area. Where a sound is audible it may trigger physiological and behavioural responses, which may expose the animals to adverse effects.

There are difficulties in examining the hearing abilities of aquatic animals (Hawkins, 2014). Many experiments which have examined the hearing of fishes and invertebrates, and their behavioural responses to sound, have been flawed, as these studies have often been performed in small tanks in the laboratory where the acoustic fields can be very complex and measurement very difficult (Gray *et al.*, 2016; Rogers *et al.*, 2016). The acoustic fields in such tanks differ greatly from those that occur in the animals' natural environment. In particular, it is difficult to measure or predict particle motion levels and determine their direction in such tanks. Moreover, these studies have often have used the technique of measuring auditory evoked potentials, a methodology which does not provide accurate information on hearing capabilities since it only measures responses of the ear and not the rest of the auditory system (Sisneros *et al.*, 2016) and results are often highly variable (Ladich and Fay, 2013). As a consequence, only hearing data based on behavioural experiments is acceptable for assessing the ability of an animal to detect sound (Sisneros *et al.*, 2016).

From the few studies of hearing capabilities in fishes that have been conducted, it is evident that there are potentially substantial differences in auditory capabilities from one fish species to another. Since it is impossible to determine hearing sensitivity for all fish species, one approach to understand hearing has been to distinguish fish groups on the basis of differences in their anatomy and what is known about hearing in other species with comparable anatomy. For example, Popper *et al.* (2014) suggested the following groups:

(1) Fishes lacking swim bladders that are sensitive only to sound particle motion and show sensitivity to only a narrow band of frequencies (e.g. flatfishes—Pleuronectiformes; and sharks skates and rays—Chondrichthyes).

(2) Fishes with a swim bladder where that organ does not appear to play a role in hearing. These fish are sensitive only to particle motion and show sensitivity to only a narrow band of frequencies. This group includes salmonids (Salmonidae) and some tunas (Scombridae), but many other species are likely to fit into this category as well.

(3) Fishes with swim bladders that are close, but not intimately connected, to the ear. These fishes are sensitive to both particle motion and sound pressure, and show a more extended frequency range than groups 1 or 2, extending up to about 500 Hz. This group includes codfishes (Gadidae), eels (Anguillidae), some drums and croakers (Sciaenidae), and perhaps other fishes.

(4) Fishes that have special structures mechanically linking the swim bladder to the ear. These fishes are sensitive primarily to sound pressure, although they also detect particle motion. They have a wider frequency range, extending to several kHz and generally show higher sensitivity to sound pressure than fishes in groups 1, 2, or 3. The group includes some of the squirrelfishes (Holocentridae), drums and croakers (Sciaenidae), herrings (Clupeidae), and the large group of Otophysan fishes.

It cannot be assumed that fishes without swim bladders (Group 1) which only detect particle motion are completely insensitive to sounds. Many elasmobranch species clearly detect and respond to underwater sounds (Myrberg, 2001; Casper *et al.*, 2012). Indeed, there are circumstances where the magnitudes of particle motion are much greater for a given sound pressure; for example, close to the water surface and in shallow water. As a consequence, it is

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important to take into account the acoustical habitats that fishes are occupying, and the possible conversion of sound pressure into particle motion, when assessing whether they can detect sounds from a particular source.

There is some evidence that the divisions between fishes defined above may apply not just to their hearing abilities but also to the effects in terms of injuries sustained from exposure to high-level sounds (Popper *et al.*, 2014). Sudden pressure changes, whether from hydrostatic pressure or sound pressure, can cause rapid motion of the walls of gas-filled cavities, particularly from impulsive sounds. These movements can result in damage to nearby tissues such as the kidney and gonads (Halvorsen *et al.*, 2011). It has not yet been investigated whether very high particle motion levels can result in injury to tissues and organs.

In terms of behavioural responses, it cannot be assumed that better hearing sensitivity implies a higher likelihood of responding to high-level sounds, leading to greater vulnerability to detrimental impacts. High-level sounds may trigger behavioural responses that are independent of species-specific hearing capabilities (Hawkins *et al.*, 2015). Behaviour may be more strongly related to the particular circumstances of the animal, the activities in which it is engaged, and the context in which it is exposed to sounds (Ellison *et al.*, 2012; Pena *et al.*, 2013).

There have been few studies of the ability of aquatic invertebrates to respond to sounds, though there are a few recent studies that examine this issue in a number of species, but in insufficient number to give a broad overview of potential effects on invertebrates (Wale *et al.*, 2013; Kunc *et al.*, 2014; Nedelec *et al.*, 2014) . Many aquatic invertebrates appear to use hydrodynamic receptors to detect, localize and identify predators, prey, conspecifics, submerged objects, or food falling to the seabed (Bleckmann, 1991; Klages *et al.*, 2002; Edmonds *et al.*, 2016). Several crustaceans appear to be especially sensitive to sound transmitted through the substrate (Bleckmann, 1991; Edmonds *et al.*, 2016; Roberts *et al.*, 2016). Some aquatic invertebrates communicate with conspecifics by means of sound and vibration (Patek *et al.*, 2009; Staaterman *et al.*, 2011). There is a clear need to examine the relative importance of seabed vibration, and the transmission of interface waves, in relation to particle motion within the water itself and especially the potential for interplay between these. Considering the extraordinary diversity of structures resembling ears in many aquatic invertebrates, it is highly likely that any number of these species can detect particle motion including seabed vibration. What evidence there is suggests that those species studied are primarily sensitive to particle motion at frequencies well below 1 kHz (Budelmann, 1992; Mooney *et al.*, 2010, 2012).

Frequency weighting

Animals do not hear equally well at all frequencies within their hearing range. Frequency weighting is therefore often applied in assessing the effects of sounds upon particular species. Such weighting minimizes the influence of low- and high-frequency sounds that may be detected poorly, if at all, by the animal. For marine mammals, generalized frequency-weighting functions have been derived for different functional hearing groups (Southall *et al.*, 2007; NMFS, 2016), but as discussed above, the number and diversity of fish species makes similar categorization impossible (Popper *et al.*, 2014), and this may prove even more difficult with invertebrates.

Nedwell *et al.* (2007) suggested a weighting approach using a metric known as the dB_{ht} (Species) as a tool for quantifying the level of sound experienced by individual marine species, but there are very substantial problems with this approach. The dB_{ht} (Species) metric purports to take into account each species' hearing ability by referencing the sound to the hearing thresholds for that species. As Hawkins and Popper (2014) pointed out, however, it is critical that the dB_{ht} (Species) be based upon accurate behavioural threshold determinations rather than measures of inner ear responses (see also Popper *et al.*, 2014). However, behavioural hearing thresholds exist for only a small number of fish species and for no invertebrates. Moreover, such data (especially inner ear response data), are generally expressed in terms of sound pressure, although most, if not all, of these organisms are sensitive to particle motion.

Despite the lack of high quality hearing data for the majority of aquatic species, and despite this being against the overriding consensus of expert scientific advice provided to regulators at the present time, the dB_{ht} (Species) has often been utilized within the United Kingdom for assessing the effects of man-made sounds, and it appears to have the tacit approval of some regulatory agencies. In particular, the dB_{ht} (Species) has been used to evaluate the likelihood of fishes responding behaviourally to sound exposure. Nedwell *et al.* (2007) suggested that strong avoidance responses by fishes start at a level about 90 dB above the dB_{ht} (Species) thresholds, while different proportions of fishes respond at lower weighted levels. However, there are very few field data derived from wild fishes and invertebrates to support these chosen levels, and the concept of dB_{ht} has not been accepted in any independent peer-reviewed publication. Indeed, extreme caution must be exercised in applying the dB_{ht} (Species) measure. Defining response criteria applicable to all species is a far too simplistic an approach to evaluating behaviour (Hawkins and Popper, 2014; Popper *et al.*, 2014). Moreover, the approach does not take into account potential for sound sensitivity to change with that of the life stage of the organism, time of year, animal motivation, or other factors that might affect hearing and behavioural responses to sound.

Weighting may be useful in some circumstances, but it requires a good deal of behaviourally measured data on hearing sensitivity; information that is not yet available. Furthermore, caution is needed in applying weighting to sounds that are potentially injurious. Sounds outside the hearing range of the animals, that are inaudible, may be capable of causing damage to tissues. In particular, the high frequencies associated with rapid rise-times may bring about or exacerbate injury (Popper *et al.*, 2014).

Part 3: assessing effects

This section discusses assessing the effects of exposure to man-made sound on fishes and determination and evaluation of potential effects. Readers are referred to papers cited in Table 1 for overviews of the topic.

Sound exposure criteria

The impact of noise is generally assessed by setting sound exposure criteria; specifying sound pressure thresholds that will have deleterious effects if they are exceeded. Currently, a number of sound exposure criteria have been adopted by regulators for marine mammals (Southall *et al.*, 2007; NMFS, 2016), although the criteria differ from one country to another. With respect to fishes,

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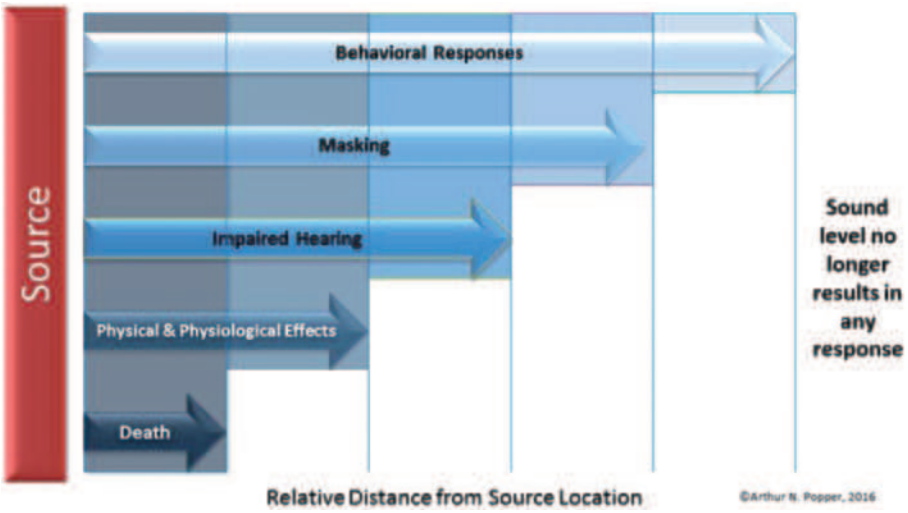

Figure 1. Potential effects of a sound at different distances from a source. Refer to Table 2 for a complete description of these potential effects. Note, the actual distances will depend on the source level, and the distance from any given source that some effect may "drop out" will likely vary as a result of numerous factors including the species of fish and perhaps even its size

there are a few criteria that have been applied by regulators (Woodbury and Stadler, 2008), but, as pointed out by Popper *et al.* (2014) they are limited in scope, and in some cases are poorly supported by scientific evidence, often using decade old science that suffered from poor experimental design and/or inappropriate controls. Sound exposure criteria have yet to be developed for aquatic invertebrates. In general, the development of criteria has concentrated upon protected species, and especially marine mammals.

Setting thresholds for a response by the animal, whether that response consists of physical changes (e.g. tissue injury), physiological changes, hearing loss, or behavioural changes, relies on the determination of dose–response relationships. (It is often hard to distinguish between physiological and physical effects since they may be intertwined. For example, a physical effect on the kidney may result in physiological changes as well, whereas a physiological effect on the kidney may result in physical effects elsewhere in the body. In the literature on effects of noise on aquatic animals, the terms "physical" and "physiological" are often used interchangeably.) That is, observations on the changes in effect upon the animal caused by differing levels of exposure (or doses) to particular sounds. As the sound level increases, there may be graded or incremental change in the magnitude of the response. In other cases, there may be a sudden change in the response. In every case, it is necessary to seek a particular response level, which may serve as a criterion for defining a response threshold (Dunlop *et al.*, 2012; Williams *et al.*, 2014). There is currently a lack of dose–response data for behavioural or stress related effects occurring as a result of exposure of fishes and invertebrates to noise, perhaps because so few species are protected by statute.

Recent peer-reviewed guidelines, developed under the auspices of the American National Standards Institute (ANSI) program of

Table 2. Potential effects of man-made sound on animals (also see Figure 1)

- *Death*: Either immediate mortality or tissue and/or physiological damage that is sufficiently severe that death occurs some time later due to decreased fitness. Mortality has a direct effect upon animal populations, especially if it affects individuals close to maturity.
- *Physical and/or Physiology Effects*: Tissue and other physical damage or physiological effects, that are recoverable but which may place animals at lower levels of fitness, may render them more open to predation, impaired feeding and growth, or lack of breeding success, until recovery takes place.
- *Impaired Hearing*: Short- or long-term changes in hearing sensitivity (temporary threshold shift - TTS or permanent threshold shift - PTS) may, or may not, reduce fitness and survival. Impairment of hearing may affect the ability of animals to capture prey and avoid predators, and also cause deterioration in communication between individuals; affecting growth, survival, and reproductive success.
- *Masking*: The presence of man-made sounds may make it difficult to detect biologically significant sounds against the noise background. Masking of sounds made by prey organisms may result in reduced feeding with effects on growth. Masking of sounds from predators may result in reduced survival. Masking of spawning signals may reduce spawning success and affect recruitment. Masking of sounds used for orientation and navigation may affect the ability of fish to find preferred habitats including spawning areas, affecting recruitment, growth, survival and reproduction.
- *Behavioural Responses*: Changes in behaviour may take place in a large proportion of the animals exposed to the sound, as such responses may occur at relatively low sound levels. Some of these behavioural responses may have adverse effects. Displacement from preferred habitats may affect feeding, growth, predation, survival and reproductive success. Changes in movement patterns may affect energy budgets, diverting energy away from egg production and other vital functions. Migrations to spawning or feeding grounds may be delayed or prevented, with detrimental effects upon growth, survival and reproductive success. Prevention of recruitment and settlement in preferred habitats may affect colonization and population size in any area exposed to high levels of noise.

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the Acoustical Society of America (ASA), have provided some directions and recommendations for ultimately setting criteria for fishes (Popper *et al.*, 2014). These directions and recommendations are elaborated on here, especially in terms of likely effects. Thus, depending on the species concerned, its distance from the source and the nature of the source, exposure to high levels of sound may result in the effects illustrated in Figure 1 and discussed in Table 2.

The ANSI-accredited report sets out the sound levels for different sound sources that are likely to result in each of these effects (Popper *et al.*, 2014). There are, however, many problems remaining in estimating sound exposure criteria for fishes (Popper *et al.*, 2014) and invertebrates (Hawkins *et al.*, 2015). Also, current criteria are mainly expressed in terms of sound pressure. While this is suitable for marine mammals and some fishes, as well as for other types of injury (e.g. barotrauma) in fishes, hearing in most fishes involves detection of particle motion. Thus, for fishes, models that focus on sound pressure alone are of limited value, at least with regard to potential effects on sound detection. Instead, it is important to have data and models that provide insight into the particle motion emanating from a source and received by the animals.

Sound exposure criteria are generally set on the basis of observations of effects upon individual animals. In setting such criteria, however, it is necessary to select those effects that might lead to significant impacts on populations, as these will have greater relevance in a regulatory context. In practice, the sound exposure criteria selected in environmental impact assessments are often largely speculative and both the scientific and legal framework for establishing them is poorly defined. There is an overall lack of information on how fishes and invertebrates respond to sound, and which of their responses indicate impairment of "life functions," defined as those activities that are especially important in the lives of animals (National Research Council, 2005). There are many data gaps that preclude the setting of specific sound exposure criteria, especially for behavioural responses by fishes (Popper *et al.*, 2014; Hawkins *et al.*, 2015).

Prioritizing species

When there is a requirement to evaluate the impacts of man-made sound on animals within a particular area one of the starting points should be to examine which species are most likely to be especially affected in terms of changes to populations and threats to their sustainability and which of these constitute key components of local ecosystems. In some areas, a number of species may already have been classified as endangered or threatened under current conservation legislation. Others may be valued highly as the basis for commercial fisheries.

Still, many of the fishes and invertebrates present may have no special conservation designation as species, even though they may be especially important components of local ecosystems. In assessing impacts upon ecosystems, it is important to examine all the species present and to identify those that may be especially vulnerable to noise exposure, and especially those that play an important ecological role within local biological communities. However, this is not always done. One possible solution is to give protection to the habitats of potentially vulnerable species, as is done for "essential fish habitat" in the USA under the Magnuson-Stevens Act. For example, habitats where reproductive activities take place, and where breeding activities involve communication by means of sound, might receive protection, as has been suggested for sound producing fishes (Casaretto *et al.*, 2014). There may be a case for designating soundscapes that are especially vulnerable and which may need protection from high levels of man-made sound.

The wide variety of fish and invertebrate species in terms of life history, breeding ecology, migratory behaviour, and hearing sensitivity may result in great differences in their vulnerability to sound exposure and other potentially damaging forces. Fisheries biologists have examined various risk-based approaches in assessing the effects of fishing upon species for which there are only limited data on key population parameters. Such approaches attempt to evaluate the vulnerability of fish species or stocks to fishing based on their biological productivity and resistance to adverse effects on the one hand, and their susceptibility to the actual fisheries operating over their range of distribution on the other hand (Hobday *et al.*, 2011).

Productivity and Susceptibility Analysis (PSA) examines the vulnerability of species to any increase in mortality above natural mortality, although this has yet to be applied to effects of sound exposure. PSA has been developed by the National Oceanographic and Atmospheric Administration (NOAA, USA) and is included in their Fisheries Toolbox (Patrick *et al.*, 2010). Productivity in a fisheries context is a function of the stock's life-history characteristics, scored using such attributes as growth, maximum age, maximum size, fecundity, and reproductive strategy. High-risk attributes, such as slow growth and low fecundity, have low scores with respect to resilience (and high scores in terms of risk). Susceptibility, in terms of noise exposure, might be judged by their hearing abilities and responsiveness to sounds (as described in the Guidelines proposed by Popper *et al.* (2014), their proximity to the noise source, their ability to move away from the source, and their likely overall degree of exposure to the noise.

A traditional method in conservation for setting priorities is to develop lists of at-risk species (Gardali *et al.*, 2012). This requires a means by which to identify which species are most vulnerable. For birds, a well-established approach has been to use indices of sensitivity or population vulnerability to particular hazards (Garthe and Hüppop, 2004; Gardali *et al.*, 2012; Busch and Garthe, 2016). Garthe and Hüppop (2004) developed an index of marine bird population vulnerability to offshore wind farms, based on scores of conservation importance of different species' populations and perceived behaviour-related risks of collision and displacement, combined into a single index. While birds live in a generally different environment from aquatic organisms, it is well established that the approaches of study, and the questions asked and how they might be answered are often fully comparable between birds (and other terrestrial) animals and aquatic organisms (Slabbekoorn *et al.*, 2010; Dooling *et al.*, 2015; Dooling and Popper, 2016).

With such methods the scoring for the various attributes must be evidence-based, with data taken from the reviewed literature. In some cases, it may be necessary to extrapolate from other datasets or from surrogate species. It may be appropriate to circulate the scoring criteria and provisional scores to a group of appropriate experts for review, in order to ensure consensus support for the final criteria and scorings – a process termed expert elicitation.

Assessing the impact of man-made underwater sound on fishes and invertebrates

The potential effects of sound on individual animals can range from mild and insignificant to severe and lasting. Some responses

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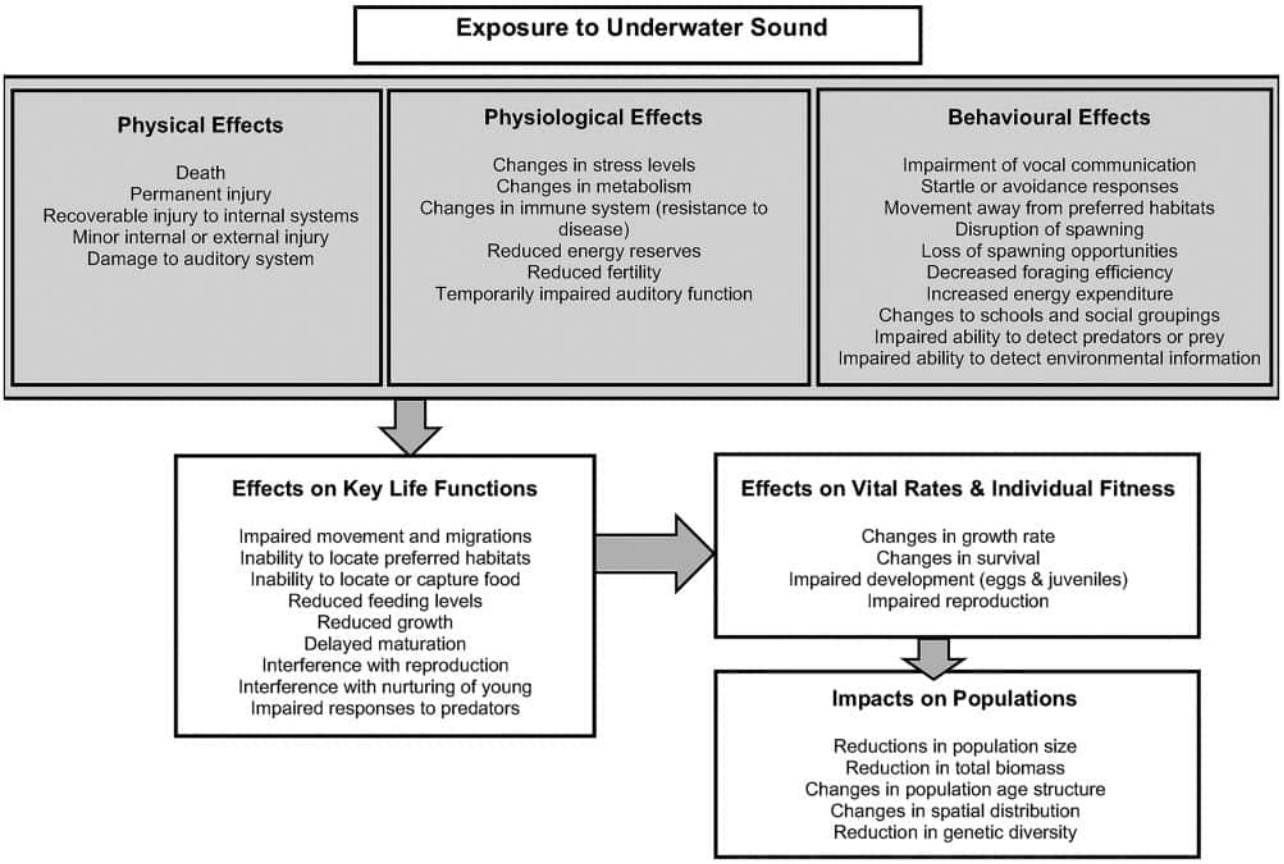

Figure 2. Effects of exposure to underwater sound on fishes (and possibly invertebrates) with respect to impact on key life functions, vital rates, and population parameters

to man-made sound may have minimal or no consequences for populations. For example, short-lasting startle responses to sounds that rapidly diminish with repeated presentation or that do not change the overall behaviour of the animals are unlikely to affect key life functions or result in changes to vital rates. Many anthropogenic sound events are transient in nature (Hildebrand, 2009; Popper and Hastings, 2009), and short-term impacts of sound may not necessarily translate into long-term consequences (Bejder *et al.*, 2009). In contrast, some high-level sounds may affect large numbers of animals, influencing key life functions including recruitment, growth, reproduction and survival, and potentially damaging whole populations.

Both acute and chronic exposures have to be taken into consideration when thinking about assessing potential effects. In many cases, animals may be exposed to sound for a limited period, as from a passing ship or seismic survey, or where construction work is undertaken for several days. The animals themselves may be moving and passing through an area where sound is prevalent. Currently, regulation of underwater sound is mainly concentrated on such short-term, acute effects.

However, chronic exposure to man-made sounds for long periods may also occur, for example where relatively stationary animals remain close to an offshore development or a busy shipping route or for animals in a busy harbour (Pine *et al.*, 2016). In general, the underwater noise generated by shipping or other sources of continuous noise remains unregulated, although discussions on voluntary guidelines for quieting ships are underway within the International Maritime Organization (IMO). On a precautionary basis, it may be important to consider the impacts of those sources that expose individuals and discrete populations to high sound levels over long periods. Indeed, by analogy, general increases in man-made background sounds clearly have an impact on humans (Le Prell *et al.*, 2012; Murphy and King, 2014a, b) and other terrestrial animals (Brumm and Slabbekoorn, 2005; Slabbekoorn and Halfwerk, 2009).

In considering full impact assessment it is imperative that one keeps in mind that underwater sound from human activities is known to have a number of adverse effects on individual aquatic animals [e.g. see papers in Popper and Hawkins (2012, 2016)]. Acute effects may arise from exposure to brief high level sounds and may include death, injury, permanent, or temporary hearing impairment or those behavioural responses that may disrupt important life functions. With longer exposure, chronic effects may occur including developmental deficiencies (de Soto *et al.*, 2013; Nedelec *et al.*, 2014) and physiological stress (Wysocki *et al.*, 2006; Rolland *et al.*, 2012; Nichols *et al.*, 2015). Both acute and chronic effects may affect life functions, including individual health and fitness, foraging efficiency, avoidance of predation, swimming energetics, reproductive behaviour etc.

Because of these complexities, actually determining the impact of man-made sound on populations of fishes and invertebrates is complex, and has yet to be successfully achieved.

As yet, there is no consensus approach to how to assess potential impacts of man-made sound on fishes and invertebrates. One

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potential approach uses the Population Consequences of Acoustic Disturbance model (PCAD) developed by the NRC (National Research Council, 2005), and put forward as a sequential procedure for evaluating such consequences. In this process, it is first necessary to characterise the relevant acoustic signal; then it is necessary to describe the resulting physical, physiological or behavioural changes, and to determine any life functions or essential activities that are affected. The next step is to investigate the resulting change in "vital rates" for the affected animals, which will have implications for actual populations. Finally, population impacts, which affect subsequent generations, need to be examined including birth rates, death rates, fertility rates, population growth rates, and variations in age composition of the population.

This sequence for PCAD is set out in Figure 2. "Transfer functions" connect the variables. A transfer function is essentially a relationship that allows one to estimate, for example, how masking by man-made sound of vocalizations by spawning fish might lead to a reduction in reproductive success, resulting in changes in the size and composition of a population. Currently, however, there is a lack of clear evidence on whether changes to life functions and vital rates actually take place, with definite impacts upon populations of fishes and invertebrates. There have simply been too few studies of the impacts of sound exposure upon wild populations of these animals.

A number of modelling techniques exist for investigating the effects of exposure to environmental changes upon life functions and vital rates. These include:

- Energy-budget modelling can be used to estimate the effects of sound exposure upon on individual energy budgets, enabling effects on individual fitness and vital rates to be examined. Dynamic Energy Budget (DEB) models aid interpretation of stressor effects, and have been used to examine the effects of toxicants on growth, reproduction and survival over time (Jager and Selck, 2011; Jager and Zimmer, 2012).
- Individual-based models (IBMs) may simulate the actions and responses of autonomous agents, the individual animals, to explore consequences for important aspects of the animals' lives and effects upon vital rates (see also agent-based models, e.g. Grimm *et al.*, 2005).

IBM models start by suggesting rules for the behaviour of individuals and then seek to reconstruct actual patterns of behaviour in response to stimulation by sounds or other changes in the environment (Willis, 2011). Thus, Rossington *et al.* (2013) used an IBM-approach, combining a hydrodynamic model with an underwater sound propagation model to assess the behavioural impact of pile driving on the movement patterns of Atlantic cod. Each "fish" in the model was represented as a particle that was subject to advection by the tides and also obeyed a set of behavioural rules, which governed their responses. The IBM indicated that "fish" which detected the sounds took up to 7 days longer to reach their destination than "fish" which did not detect the sounds. In applying such models, however, it is important to ensure that the assumptions made about the behaviour of the animals, and especially any changes in responses to sounds, are valid and based upon field observations.

Assessing impacts of underwater sound on populations

Once effects upon fishes and invertebrates have been observed, how does one then assess actual impacts? There are numerous reports and impact assessments where a range of effects is assumed to have an impact at the level of particular marine fish populations, but without there being direct evidence being adduced to support these conclusions. Ultimately, this lack of evidence is affecting our ability to properly evaluate and mitigate effects of man-made sounds on marine ecosystems, making it difficult to implement informed risk-management decisions. Bridging the gap between observed effects on individual fish and impacts on populations is often beyond our current capabilities. Currently, we are poorly equipped to do any more than use expert elicitation for predicting impacts. Usually decisions are based on assumptions about effects of acute behavioural changes in terms of their influence upon the population dynamics of single species.

The PCAD model developed by the NRC (National Research Council, 2005) has been applied to marine mammals, most notably elephant seals (Costa *et al.*, 2016). The only example of PCAD being applied to fishes was by Sivle *et al.* (2015) on the effects of naval sonar on captive Atlantic herring populations. In this study, the actual responses of the fish were minimal. Thus, it has yet to be demonstrated whether the PCAD model can readily be applied to fishes and invertebrates.

There is still a need to explore the value of PCAD and other models for examining the consequences of sound exposure upon fishes and invertebrate populations, which vary greatly in their characteristics and are very different to marine mammal populations. One possible approach at this stage is to examine through modelling whether the responses to sound commonly observed from fishes and invertebrates can ever have population-level effects. A number of models have been developed to assess the vulnerability of fish stocks to fishing including the PSA approach mentioned earlier (Patrick *et al.*, 2010; McCully Phillips and Ellis, 2015). Their possible application to assessing the effects of sound needs to be explored further.

Ecological Risk Assessments (ERAs) have also been applied to examining effects upon ecosystems. Within the ERA framework (Smith *et al.*, 2007; Hobday *et al.*, 2011), a hierarchical approach is taken to evaluate the effects of activities such as fishing. The ecological focus is broadened out from concerns about target species and resources to concerns about non-target species, including protected species, habitats, and ecological communities. A similar approach might be adopted for examining the exposure of ecosystems to man-made sounds.

The regulation of sound making activities

Regulation of environmental stressors is often based on legislation that protects key habitats and species. Species are either selected on the basis of their conservation status (for example, whether they are listed as being endangered or threatened), or their commercial importance (for example, whether they form the basis for important fisheries). Relatively few species of fish and invertebrates are classed as endangered and the majority do not receive the strong protection often granted to marine mammals and birds.

Much of the regulation of sound-making activities is based upon environmental impact assessments and environmental statements that are directed at marine mammals. Such assessments are not particularly relevant to fishes or invertebrates. Current regulations may fail to select those fishes and invertebrates that are especially vulnerable, and/or fail to identify periods

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of their life when they may be particularly vulnerable to sound exposure. Many assessments also express sound exposure in terms of inappropriate metrics, and employ sound exposure criteria, that are not well supported by scientific data.

An example of such an assessment is provided by the Environmental Statement submitted to the Scottish Government with respect to the siting of the Beatrice Offshore Wind Farm development on the east coast of Scotland (Marine Scotland, 2012). Key fishes and shellfish were selected for assessment mainly based on the their commercial interest and whether they were species of conservation importance, rather than their susceptibility to sound exposure. The metrics used to assess effects from pile driving and other noise sources were based on sound pressure, despite many of the species concerned being sensitive to particle motion. Modelling and assessment took no account of ground roll, which is likely to generate high sound particle motion levels at a considerable distance from pile driving operations, and may affect both fishes and invertebrates.

Assessments submitted for wind farms at other locations have been similarly flawed. Such assessments cannot be considered satisfactory for fishes and invertebrates that are sensitive to particle motion (Hawkins *et al.*, 2015).

Many current impact assessments are also based on predictions of how fishes and invertebrates will behave in particular circumstances. It is often accepted that exposure to sound may disrupt normal behaviour or displace these animals from areas they frequent, although actual data supporting these assumptions may not exist. Consideration is then given to whether certain mitigation measures (e.g. time/area closures, establishment of exclusion zones, ramp up procedures), would provide protective benefits. Judgement is then made on whether the predicted effects have adverse effects upon populations—but often without appropriate data being available.

Thus, it is evident that many current environmental impact assessments are not fully assessing the impact of underwater sound upon fishes and invertebrates. There also often appears to be a lack of critical appraisal by regulators in evaluating the methodologies for such assessments, in that they are accepted despite their obvious flaws, as was the case in design of the policies on effects of pile driving on fishes adopted on the USA west coast (Woodbury and Stadler, 2008) but which have been shown to be primarily based on studies with very weak design and poor controls (Popper and Hastings, 2009). This gives major grounds for concern.

Monitoring environmental sound

Additional activities are taking place that are intended to provide wider protection of the marine environment from the effects of man-made sound. In the European Union, the Marine Strategy Framework Directive (MSFD) requires Member States to establish monitoring programmes for the on-going assessment of the environmental status of their marine waters (Tasker *et al.*, 2010; Dekeling *et al.*, 2014, 2016). This monitoring is intended to provide data on a series of indicators for key environmental "descriptors" in order to assess whether Good Environmental Status (GES) has been achieved. One of the chosen descriptors is for "Energy including Noise." In September 2010, the European Commission decided that with respect to energy, measurement of underwater noise should have first priority in relation to assessment and monitoring. Indicators for underwater noise were then defined: Indicator 11.1.1 for "low- and mid-frequency impulsive sounds" and Indicator 11.2.1 for "continuous low frequency sound (ambient noise)". Those scientists advising the Commission proposed that, as the effects of sound were known for only a limited number of species, the first stage of the implementation of monitoring would be to establish a baseline of current noise levels, using the two indicators that had been identified.

In the USA, NOAA, working with other US agencies including BOEM, began establishing in 2014 it's first-ever coordinated Ocean Noise Reference Station Network—a set of undersea listening stations deployed around the USA designed to systematically measure ambient noise levels in the ocean (Gedamke *et al.*, 2016). The objective of this project is to establish a long-term NOAA-operated network of noise reference stations throughout the U.S. Exclusive Economic Zone to monitor long-term changes and trends in the underwater ambient sound field due to anthropogenic and natural sound sources.

Although such studies are to be welcomed, monitoring noise levels *per se* contributes little to our understanding of whether there will be impacts upon fishes or invertebrates, or whether Good Environmental Status has been achieved with respect to noise. European Indicator 11.1.1 (Dekeling *et al.*, 2014, 2016) simply registers "the proportion of days and their distribution within a calendar year, over geographical locations whose shape and area are to be determined, and their spatial distribution in which source level or suitable proxy of anthropogenic sound sources, measured over the frequency band 10 Hz–10 kHz, exceeds a value that is likely to entail significant impact on marine animals" (Dolman *et al.*, 2016). However, the actual nature of any impulsive sounds generated is also important. Measurements are required of those acoustical features of impulsive sounds that influence the responses of animals (including injury, physiological effects, and behavioural effects), including rise times, repetition rates, inter-pulse intervals, duration of single signals and of sequences of signals, and duty cycles.

Measurements of average ambient noise levels are similarly limited in scope and utility. Under European Indicator 11.2.1 (Dekeling *et al.*, 2016) the arithmetic mean (of samples of squared sound pressure) is used to establish average ambient noise levels in two third-octave bands centred at 63 and 125 Hz. These frequencies were considered to be representative of shipping noise. However, recent studies have indicated that noisier bands may exist at frequencies above 63 Hz or 125 Hz both in the Adriatic Sea (Codarin and Picciulin, 2015) and in the Baltic Sea (Hermannsen *et al.*, 2014). These authors have questioned whether the two chosen frequency bands serve as reliable proxies for mid and high-frequency noise emissions from different ship types. Hermannsen *et al.* (2014) concluded that a diverse range of vessels produce substantial noise at high frequencies, and that vessel noise should be considered over a broader frequency range.

Monitoring programmes both in Europe and the USA are essentially based on measurements of long-term average sound pressure levels. To assess properly the effects of upon fishes, invertebrates, and other animals is it is important to monitor temporal variations in broadband sound in relevant habitats and at appropriate depths, using both sound pressure sensors and particle motion sensors; with due attention being paid to the roughness (kurtosis) and other characteristics of the noise that will influence effects upon animals. It is also important not just to make such measurements in areas affected by man-made sounds

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but also to define and map areas with natural soundscapes that might be adversely affected by exposure to man-made sounds, using them as examples of Good Environmental Status. There may be a case for designating such sites, with unique and vulnerable soundscapes, as protected areas.

Conclusions

It is evident that many attempts to assess the impact of sound exposure upon fishes and invertebrates have been flawed. Those sound exposure criteria that have been applied, especially to behavioural responses, have often not been based on clear evidence from peer-reviewed scientific papers. Many assessments have utilized inappropriate acoustic metrics to describe the sound to which the animals have been exposed, especially for impulsive sounds. In particular, many have ignored the sensitivity of fishes and invertebrates to particle motion. Measurements of sound pressure are often insufficient to describe the levels of particle motion in a complex acoustic environment. Modelling of sound propagation has often been poorly performed or has lacked transparency. Many assessments have focussed on the immediate effects of specific developments, and there have been few strategic assessments of the effects of long-term, chronic exposure to sounds, which may often emanate from unregulated sources.

Discussions involving both regulators and scientists have led to the identification of a number of information gaps (summarized in Hawkins *et al.* (2015) and Lucke *et al.* (2016b). We have built upon those discussions to identify key prerequisites for evaluating impacts on fishes and invertebrates. These pre-requisites include:

(1) The development and application of procedures for screening and assigning priorities to fish and invertebrate species that may be especially vulnerable to noise exposure, including those which play important roles in local ecosystems. High priority should not just be assigned to legally protected or commercially important species, but should be considered for a range of species, based on their biological productivity, vulnerability to adverse effects, and susceptibility to noise exposure.

(2) The development of valid and appropriate sound exposure criteria specific to fishes and invertebrates and which will allow regulators to set limits to the sound levels that are permissible under particular conditions. Such criteria should be based on dose–response data for relevant physical, physiological, behavioural, and/or stress effects; and especially those that may affect key life functions. The criteria must be expressed in metrics that reflect those features of the sounds that have potential effects upon the species of interest.

(3) Full descriptions of the sounds produced by different sources are required for full assessments and these must be expressed in appropriate metrics (tailored both to the nature of the sounds, whether continuous or impulsive, and those characteristic features that may be important to the animals), and including data on the magnitude and direction of particle motion at different locations with respect to the source.

(4) Information on the prevailing levels of background noise in the environment, including the presence of sounds of natural origin that may be important to fishes and invertebrates, so that the effects of masking of those sounds can be examined. There is a particular need to collect data on the natural levels and directional components of sound particle motion at different depths and locations in a variety of aquatic environments, and to examine the importance of sound particle motion in providing directional cues for orientation and navigation.

(5) Examination of underwater soundscapes to identify those that are unique or vulnerable to noise pollution and which are deserving of being designated as protected areas.

(6) Examination of the propagation of sound from man-made sources and the levels reached at different locations, expressed both in terms of sound pressure and particle motion. In terms of predicting effects upon fishes and invertebrates, and the spatial extent of those effects, it is important that the propagation models should take account of sound transmission through the seabed, and examine propagation into, and in, shallow water since this differs substantially from that in deep water away from surfaces.

(7) Consideration of the actual physical, physiological, and behavioural responses of individuals and groups of animals, especially in terms of those changes that may influence individual fitness and health. Distinctions should be made between short-term, transient changes, from which the animals rapidly recover, and those which have lasting effects upon individuals.

(8) Close examination of those responses in terms of their actual effects upon key life functions and vital rates, using energy-budget models, or individually based models or a combination of both.

(9) Estimation of subsequent impacts upon populations of fishes and invertebrates, especially those which constitute key components of local ecosystems, together with the prediction of likely ecosystem effects. Such estimates can be achieved through modelling studies that take account of changes in vital rates.

(10) Carry out behavioural response and hearing studies on fishes and invertebrates in an acoustic environment as close as possible to that of the animal's natural environment. For example, the responses of a fish or invertebrate living in midwater in the open ocean should be examined in a free sound field, distant from reflecting boundaries (that is, at a distance of at least one wavelength of the sound frequency being examined). In contrast, for a fish dwelling in shallow-water, responses should be examined in shallow water with an appropriate substrate and with lateral boundary conditions simulating those found in its natural habitat. Experiments on fishes and invertebrates that live on or within the substrate should take full account of sound transmission through the substrate. Any sounds presented should resemble those that would be received by the animal under natural conditions. It is especially necessary to ensure that any signals presented have the appropriate mix of sound particle motion components and sound pressure. It is also important to incorporate well-designed controls for the experiments, and to ensure that replication is statistically adequate.

(11) Determination and development of mitigation approaches to reduce sound source levels for sound pressure, particle

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motion, and substrate vibration that are directed at fishes and invertebrates rather than application of approaches (e.g. ramp-up) that were developed for, and more applicable to, marine mammals.

(12) Incorporation of data from additional studies that focus on filling many of the data gaps in our knowledge of effects of man-made sound on fishes as invertebrates as identified in several recent reports (Normandeau, 2012a, b; Hawkins *et al.*, 2015).

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Appendix 10
Letter to Tim Facer 17.10.23

Carter Jonas

3 Royal Court
Kings Worthy
Winchester
SO23 7TW

Your ref:
Our ref: WSX277586 and WSX277585

Mr & Mrs Facer (care of Robert Crawford-Clarke)
Cratemans Farm
Dragons Lane
Cowfold
RH13 8DX

17 October 2023

Dear Mr & Mrs Facer,

CC: Robert Crawford-Clarke

RESPONSE TO QUERIES RAISED THROUGH AND POST CONSULTATION (15 NOVEMBER 2022 – 17 JULY 2023)

I am writing to set out a comprehensive response to all the queries raised in the following correspondence.

- Consultation response dated 15th November 2022 – Mr Facer
- Map given to James D'Alessandro at the Ashurst Consultation Drop In event on 11 November 2022
- 23 November 2022 – Email sent by Tim Facer
- 12 December 2022 – Email sent by Robert Crawford-Clarke
- 16 December 2022 – Email sent by Tim Facer
- 25 April 2023 – Email sent by Robert Crawford-Clarke
- 17 July 2023 – Email sent by Robert Crawford-Clarke

1 - Environmental Surveys

Extract from Consultation response dated 15 November 2022

> 1. On various occasions, both we and our client have been promised the results of the various environmental surveys your consultants have undertaken on his land, but to date these have not been received. We assume your current proposals on the cable route take into account these results, and wish to place on record that it is unreasonable to expect our client to engage in this consultation process without this information.

As you are aware the cable route is over 40km long and survey data is largely digitised for the whole stretch. The Preliminary Environmental Information Report (PEIR) and supplementary report set out information on surveys carried out and findings, for example, relating to habitats and protected species along the cable route. This information has now been taken from raw survey data, drawn together and analysed by our EIA consultants. and the most up to date results presented in the Environmental Statement (ES) in accordance with the relevant guidance and legislation from organisations such as

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Classification L2 - Business Data

Natural England. This ES has been submitted with the DCO application material which is available to view at https://www.gov.uk/government/organisations/planning-inspectorate.

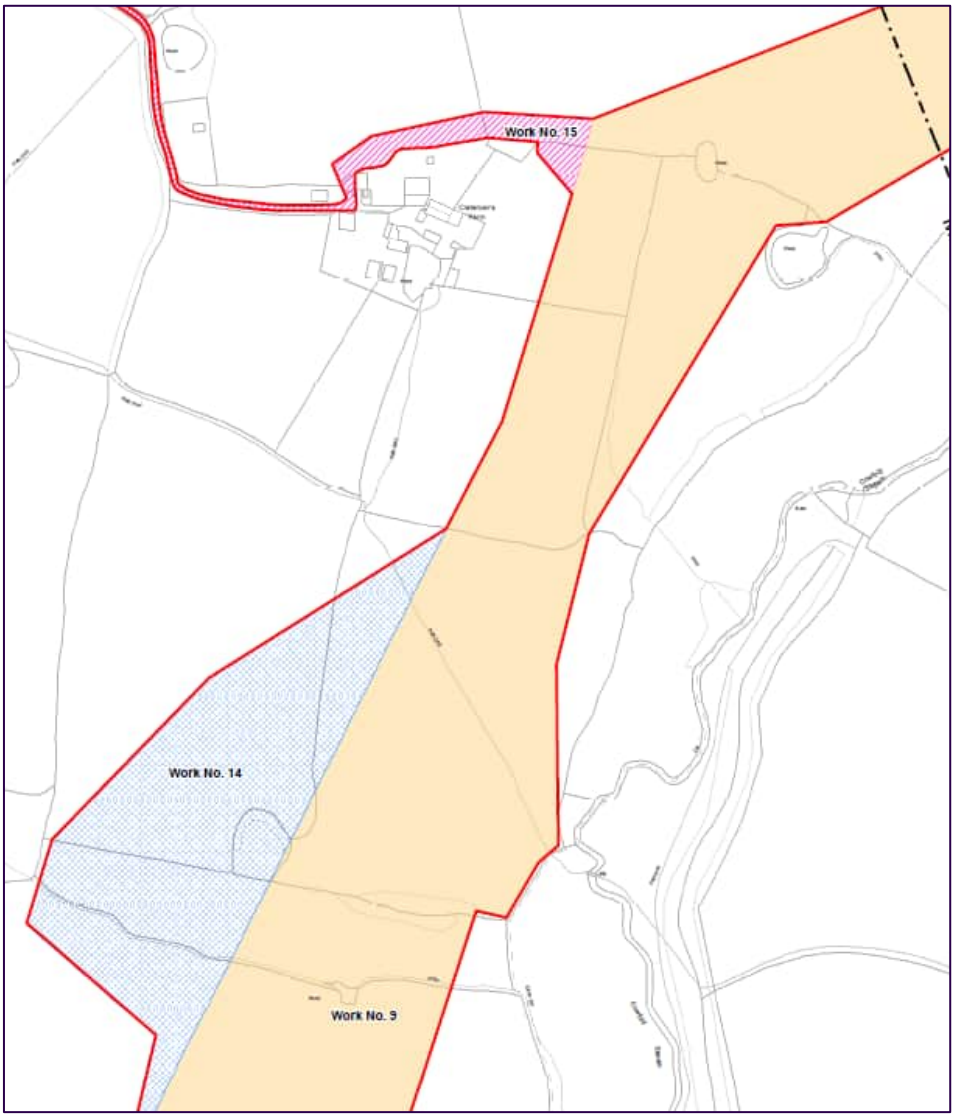
Rampion 2 has been advised by its environmental consultant that forwarding the raw data is unlikely to be informative, however, we would be happy to provide information from the ES relevant to specific survey areas of interest which you have.

2 - DCO Boundary

Extract from Consultation response dated 15 November 2022

> 2. It is very difficult to comment meaningfully on the latest proposals when the red line on the plan is drawn to cover such a wide area. This leaves the actual proposed cable route open to very broad interpretation. If all the data you have gathered to date has been properly analysed by you, then we see no reason why a more accurate indication of the proposed route options cannot be shown on the map. Again, it is unreasonable to expect our client to comment meaningfully on your latest proposals without this information.

Please see below plan of the proposed cable route area shown coloured brown and accesses coloured blue, included within the DCO boundary. The DCO boundary is wider than the construction corridor and permanent cable easement which are anticipated to be in the region of 40m wide and 20m wide respectively. However further surveys and ground investigations will be required prior to construction to determine the exact route to be taken within the corridor. Land use constraints can be factored into this detailed routeing, and we would welcome further discussion about this.



Key

Development Consent Order Limits

Works Area Descriptions

Work No. 9 - Cable installation works (including construction and operational access)

Work No. 13 - Temporary construction access

Work No. 14 - Construction and operational access

Work No. 15 - Operational access

3 – Moving the Cable entry point further East

Extract from Consultation response dated 15 November 2022

> It appears from the brown colouring on the plan that you are at least considering moving the entry point at the south end of the farm far further to the east than in your original consideration, despite you previously stating that this would not be possible. My client strongly supports this change and in making the entry point as far to the east as possible. This will enable the cable route to pass through the farm further to the east, and to keep it to his preferred route as shown by the black line in our letter of 25th January.

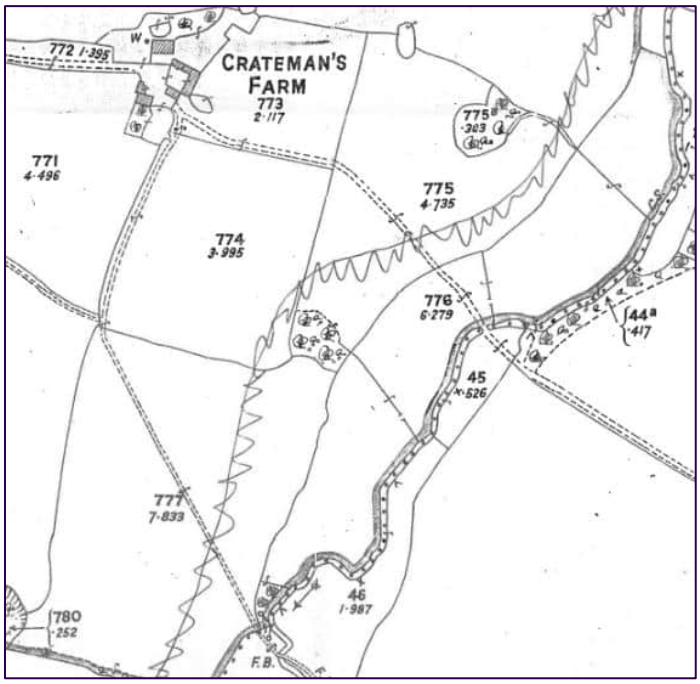
Upon review (detailed in previous email responses and further below), it was possible to move the cable route further to the east in this location, and this is what the DCO application now reflects.

4 – Preference for Specific Routing

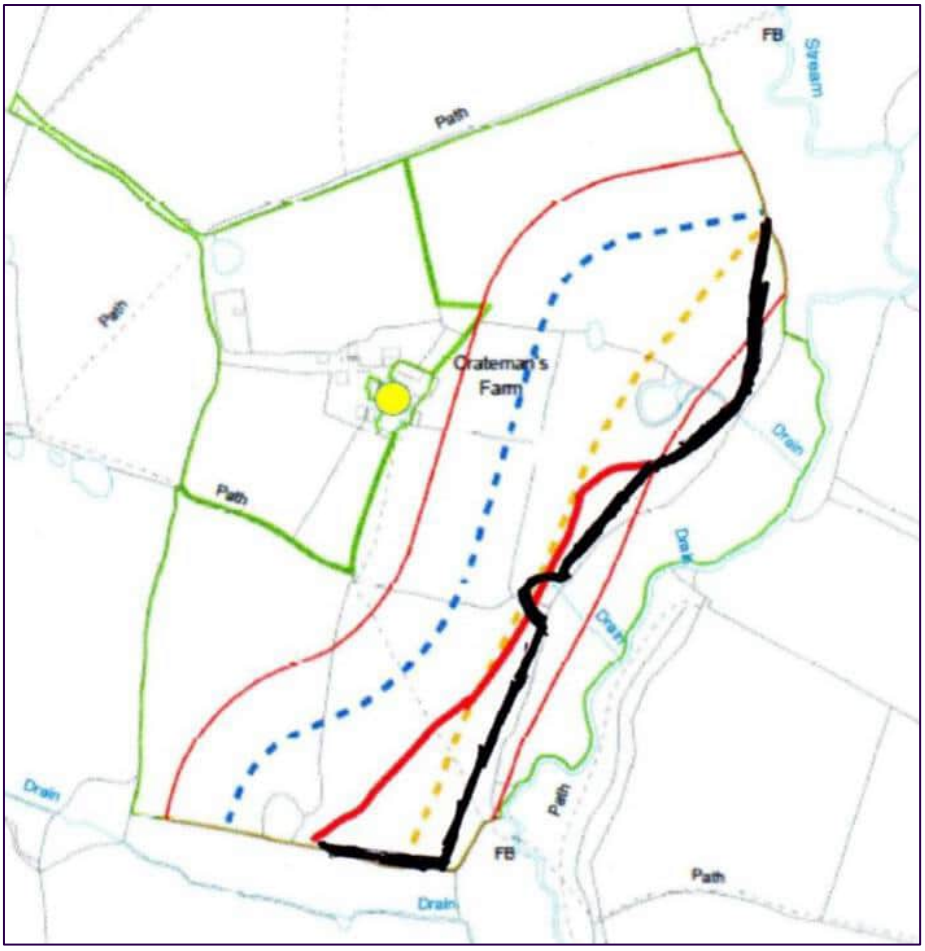
Extract from Consultation response dated 15 November 2022

> However, your current plan suggests that the route may not follow my client's favoured one as it heads north through the farm, and will pass to the west side of the pond to the east of the farmhouse, rather than the east side of this pond as we discussed at length with you on site. The significance of this is that, if the route passes to the west of the pond, it will be considerably closer to, and far more visible from, the house and cause my client unnecessary disturbance throughout the years of construction. It will also cause disturbance and land loss in the more productive land on the farm.

For reference, your preferred route is detailed by the below map provided to James D'Alessandro at the Ashurst Consultation Drop In event on 11 November 2022.



As detailed in the engagement note dated 23.07.2021 and 11.08.2021, you put forward a red and a black route on the far eastern side of the Facer's title boundary. For ease, please see plan below detailing the map drawn by you and your agent.



We have noted your feedback and sought to take into account the views expressed by or on behalf of Mr Facer in his consultation responses and the points raised by him at the four site meetings on 22.07.2021, 11.08.2021, 21.01.2022 and 25.04.2022.

Subsequently, the project team reviewed the route, taking Mr Facer's concerns into account by amending the route. The new proposals (as detailed within the engagement note from site meetings on 21.1.22 and 25.4.22, provided on 14.11.22), have moved the route away from the farmhouse, further to the east, albeit on the western side of the pond mentioned above.

A route to the east of the pond (which we have labelled option B on the map below) is heavily constrained by the pond, the Cowfold Stream, the flood zone relating to these, and vegetation associated with them.

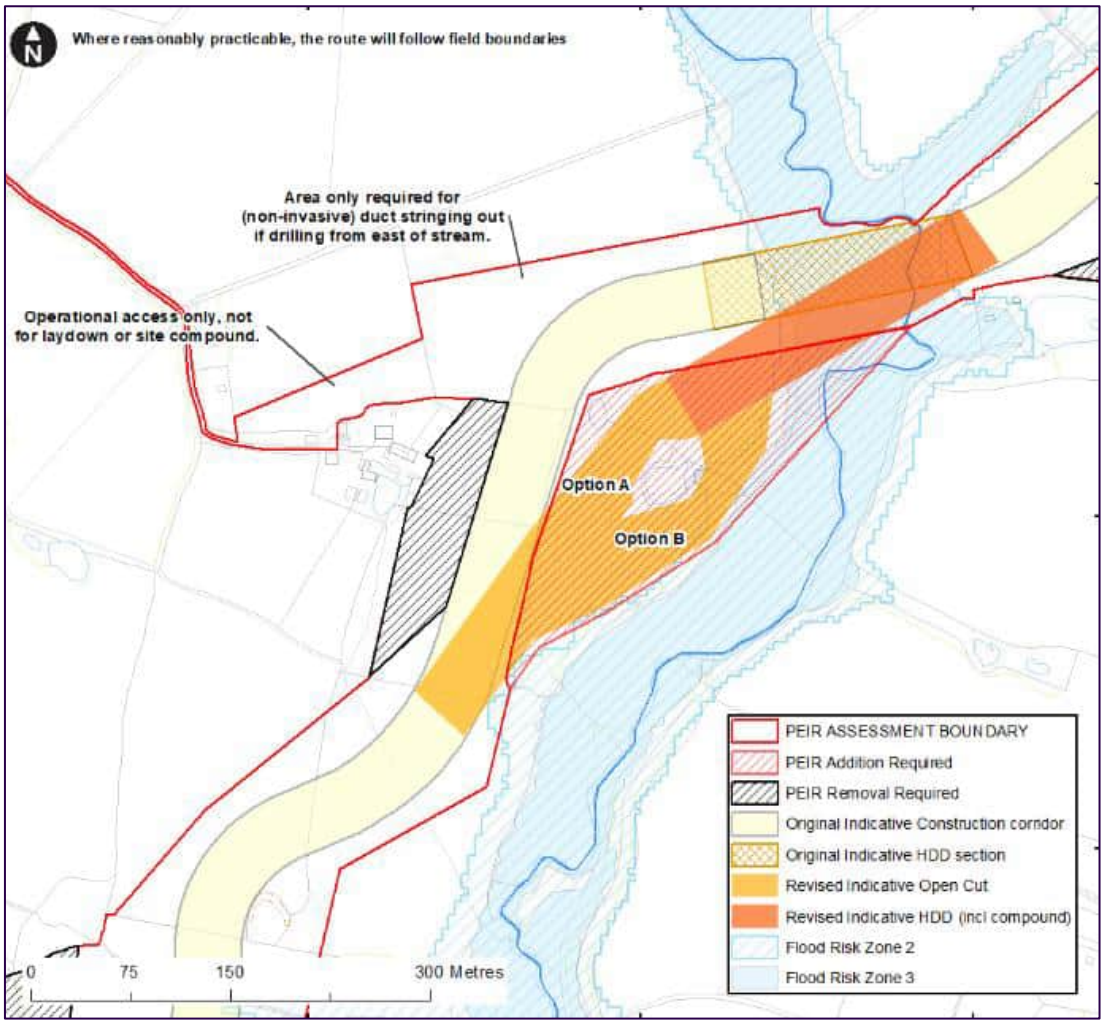
As described previously, we are seeking a construction corridor 40m wide; to the east of the pond some of this corridor would be within land identified by the Environment Agency as likely to flood. We are required by planning policy to locate works outside of the flood zone where possible, which is possible by routeing to the west of the pond.

A 40m corridor to the east of the pond would also likely result in the felling of trees, works within the root protection zones of others and associated habitat loss. While trees would be affected on either route, the greater damage would be caused by the eastern route, including the pinch point between the pond

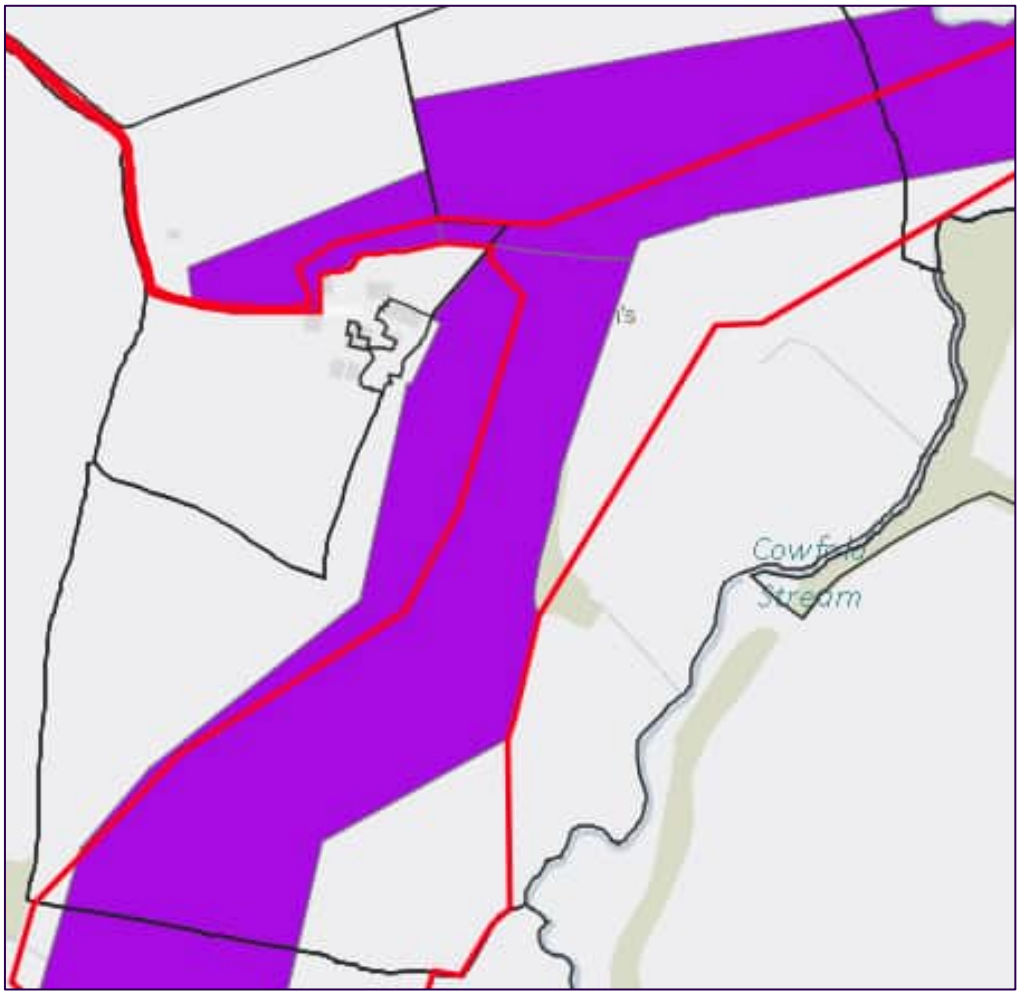
and the Cowfold Stream. Given their proximity to the Cowfold Stream and pond, there is also likely to be a greater risk of disturbance to fauna. The Cowfold Stream is known to support a range of species including otter and nightingale.

Records also show that the area to the east has been used historically for mining or quarrying, and further assessment would need to be done before risks to ground stability could be ruled out.

Therefore, the decision was taken to move forward with Option A.



Changes have been made to the cable routeing where they can be justified on environmental and engineering grounds and these changes are now reflected within the final DCO boundary. As detailed within the map below, the purple demarcates the original route, and the area outlined in red details the amended current DCO boundary.



For further details on the impact on the farmhouse, please refer to Section 9 below.

5 – Area close to Cowfold Stream with Flood Zone

Extract from Consultation response dated 15 November 2022

> There is no reason for the cable route to avoid the land further to the east of the farm. Whilst we accept that this land may appear on flood risk maps as being at risk from flooding, my client confirms that it has not flooded in his memory and he has been resident at the farm for over 60 years. This suggests that more detailed on site analysis is required by yourselves rather than relying on more broad spectrum mapping as justification for avoiding this area.

We have noted your feedback. As previously explained at the site meetings, and as recorded in the Engagement notes from 21.1.22 and 25.4.22 (provided on 07.09.22) and Engagement notes sent via email on 14.11.22, the area to the east of the farm is within an area identified by the Environment Agency as an area at risk of flooding.

The flood data referred to is based on the Environment Agency (EA) owned flood models, which the Environmental Assessment team and local authorities believe provide the best and most up to date

estimate of flood risk. In this region, the model outputs are from a modelling study undertaken for the EA, which considered fluvial and tidal sources of flood risk and allowances for climate change and sea level rise. Further to consultation with bodies such as the Environment Agency, Rampion 2 committed to avoiding areas at risk of flooding where possible.

Furthermore, there are additional environmental constraints which restrict the ability to route the cable further to the east, as explained in my email from 14.11.22. *'Please be advised that we cannot survey a route that our team of environmental consultants consider to be an unviable route. The additional area you have shaded in red is within the floodplain of Cowfold stream itself and interferes with the root protection zone of trees along Cowfold stream and the habitat of certain species. Our environmental teams have previously discounted Option B, and therefore moved forward with Option A within our red line boundary. This was communicated at the meetings in January and April 2022, as per the attached.*

As previously outlined, we have reflected your client's views in the DCO red line boundary and have such moved the cable route further towards Cowfold stream, and away from the property. This is also the case towards the south of their title.'

6 - Area outlined as Works No.15 (Operational Access) on the Works plans

Extract from Consultation response dated 15 November 2022

> It was suggested on site by Carter Jonas that you would need to occupy the whole field adjoining the exit point at the north end of the farm, plus an area to the north of the farmhouse during construction, and possibly that some of these areas might be permanently affected. My client is extremely concerned about this. It is hard to comment given the absence of any clarity as to why these areas may be required, but the use of any land so close the house would be an unreasonable disturbance to my client.

As shown on the Plan in Section 2 of this letter (page 3), the area to the north of the farmhouse is required for Operational access only (Works No.15). Use of that land during construction is not required but Rampion 2 will need a right of access over it. It is anticipated that this access right will be used infrequently in the event that maintenance of the cable is required once construction of the scheme is finished and it is operational.

7 - Temporary Haul Road

Extract from Consultation response dated 15 November 2022

> Mention has also been made on site of the need for temporary construction roads across my clients land to enable access by heavy machinery, specifically for HDD crossings. No detail has been provided of this but presumably selection of the final route will drive the requirement for such accesses. My client reserves the right to comment on any such accesses if they are proposed on his property.

The position with regards the haul road remains as previously outlined in the email sent to you on 22.08.2022, and re-sent on 07.09.2022 within the 'Site Meeting Notes from 21.1.22 and 25.4.22':

***'Haul Road** - In addition, when we were last on site at Crateman's Farm, we discussed the need for a haul road. This is because the revised route on your land has the potential for two trenchless crossings (one under Cowfold stream and one under the two hedgerows/ flood zone area to the south) which*

leaves an area of land that will effectively be landlocked in the middle. A haul road is likely to be required to access this area. We are currently not in a position to say where this haul road will be located, but it will be within the 40m wide construction corridor for the cable. The engineers will likely seek the least vegetated area once detailed designs are drawn up subject to further ecological and ground investigation work. We also note your preference for not affecting the field to the west unnecessarily, although this decision may be determined by engineering/ environmental considerations.'

As the project progresses and the design is adjusted accordingly, we will liaise with you and your agent regarding the proposals.

8 - Potential Solar Farm Development

Extract from Consultation response dated 15 November 2022

> My client has been approached by a solar developer. Subject to them being able to obtain the necessary grid connection, which is highly likely, they would wish to develop the majority of the farmland as a solar farm. This will not be
>
> possible if the cable is laid through the farm, and the amount of land so sterilized is likely to make a solar farm unviable on the rest of it. The financial consequences of this for my client will be enormous, given the local market for leasing land for solar farms suggests rental values of £1,100 per acre per annum or more for a 40 year term.

We cannot comment on speculative proposals therefore please provide details of the proposals put forward by the solar developer such as draft layouts, the expected timing of grid connection and planning applications, offers made, and the basis of any land or contractual agreements with them. Currently there are no planning applications or consents for solar development on the Horsham District Council planning website in this location.

9 - Concerns about Grade II Listed farmhouse

Extract from Consultation response dated 15 November 2022

> Cratemans Farmhouse is Listed Grade 2. We are aware from local experience of large scale projects such as this that Heritage Authorities view anything which may affect their setting with extreme concern. Such concerns could be overcome if your route sticks to that preferred by my client as referred to above.

The project team is aware that the farmhouse is Grade II Listed and this has been assessed in the Environmental Assessment submitted with the DCO, which acknowledges that Crateman's Farmhouse has high heritage significance deriving from historic and architectural interest.

Construction activities associated with the onshore cable corridor and HDD compounds will be visible to the east, southeast and south of the asset with a partial screening effect and visual separation provided by intervening fields and boundary planting. While the compounds and cable-associated works would introduce construction activities and result in some disturbance to the broader farmland surroundings of the asset, the farmhouse's principal setting relationship to the associated historic farmstead buildings would remain undisturbed. The Environmental Statement notes that there would be

a low magnitude of change to an asset of high heritage significance (sensitivity), producing a moderate adverse residual effect which, due to the temporary nature, would be 'not significant'.

10 - Concerns about water heating/ Risk of Legionella

Extract from Consultation response dated 15 November 2022

> We reiterate my client's concerns about the impact of the scheme on their water main and draw your attention to the points stated in our letter of 25th January. We understand that you confirmed, when you met my client on 11th November, that the cables will generate heating in the water main if they cross it, thereby acknowledging the potential health hazards highlighted by Southern Water.

In addition, the engineering team have commented as follows:

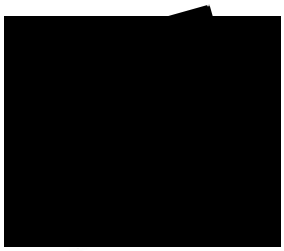
- The cables are proposed to be buried at least 1.2m below ground level.
- A vertical separation between the cables and the water supply will be applied to ensure the water supply is not subject to a material rise in temperature when compared with natural rises and drops in ground temperatures. An increased risk of legionella caused by the cable installation is therefore not expected.

We would be grateful to receive a written summary of Southern Water's concerns, so we may review and comment as required.

Should you have any queries or wish to discuss this further please do not hesitate to contact me.

We have sent you key terms for your review and would be happy to discuss mitigation measures which could be captured in detail in a voluntary agreement in order to give you some certainty at an earlier stage of the DCO process.

Yours sincerely



Lucy Tebbutt MRICS
Associate

E: [redacted]@carterjonas.co.uk
[redacted]

Rampion 2
WIND FARM

Welcome

Click to watch the welcome video on YouTube

1

Why we're considering expanding Rampion

We must urgently tackle climate change.

UN IPCC Climate Scientists say we have until the end of the decade to keep warming below 1.5ºC above pre-industrial levels, to prevent catastrophic and irreversible impacts on climate change.

Rampion 2 WIND FARM

Why off the Sussex coast?

There are 40 offshore wind farms around the UK. Only one of these is on the south coast – Rampion. Yet the south east of England is one of the most densely populated regions in Europe and therefore has a massive electricity demand, so it makes sense to generate the power where the demand centre is located.

The UK Government has formally declared a Climate Emergency.

UK Government target for offshore wind

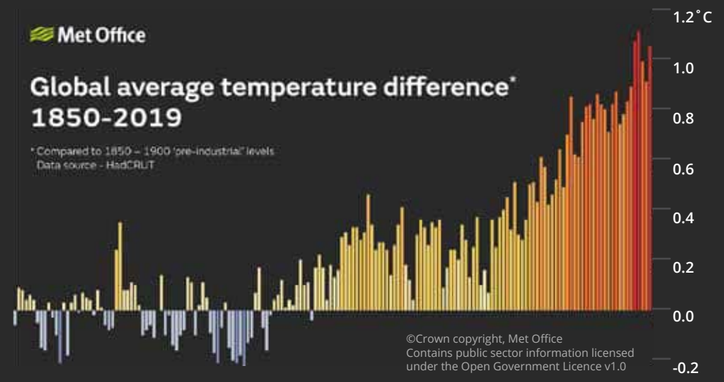
40 gigawatts (GW) of offshore wind capacity by the end of this decade. This equates to a quadrupling of offshore wind capacity from around 10 gigawatts (GW) in 2020, to 40GW by 2030.

Securing our energy supplies

Around 5% of UK electricity is still generated by coal but this is going to be phased out in the next 2 – 3 years and requires clean, green energy to replace it.

Electric Vehicles and hydrogen

Great strides have recently been taken in securing a greener future for transport, aviation and heating, through advancements in battery technology and applications for hydrogen fuel. However, these technologies are only carbon neutral if the electricity needed to charge batteries and produce hydrogen, comes from renewable energy sources.



Did you know?

- The UK is the windiest country in Europe.
- Wind is leading the way for renewable energy.
- Wind energy currently supplies 20% of the UK's electricity (10% from onshore and 10% from offshore wind).
- The cost of offshore wind has halved in the last few years and is now cheaper than nuclear and coal.

Rampion Visitor Centre, Brighton

Find out more about climate change, the history of electricity and wind energy technology, at our Rampion Visitor Centre:
www.rampionoffshore.com/visitor-centre

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Appendix 11
Rampion 2 Virtual Exhibition 15.01.21

2

The Development Process

The Consenting Process

As the Rampion 2 Offshore Wind Farm will generate over 100 megawatts (MW) of power, it is defined as a **Nationally Significant Infrastructure Project** (NSIP). This means that the development consent application (like a planning application) is assessed and determined under the **Planning Act 2008**.

The development consent application is submitted to the Planning Inspectorate for examination, following engagement and consultation with important consultees such as local authorities, key stakeholders and the local community, to help shape the proposals. The final decision is made by the Secretary of State for Business, Energy & Industrial Strategy (BEIS).

Consultation

We are taking this early opportunity to carry out a voluntary **informal consultation** exercise, to raise awareness of the project and invite feedback on any issues you think we should be taking into account. We will consider this feedback alongside the results of our technical and environmental surveys, to produce our refined draft proposals. However, this is only the first opportunity for you to have your say.

Under the Act, we are required to carry out **formal consultation** with communities and statutory organisations, before an application can be made. We will therefore be formally consulting on our refined draft proposals in late spring. This will include more detailed information, including a defined onshore cable route and information on how we intend to construct the project and mitigate impacts.

We will accommodate feedback wherever we can. Otherwise we will explain the technical, environmental or other reasons why we were unable to do so.

A detailed analysis of the feedback and the subsequent changes we make will be set out in our **Consultation Report**. This will form an integral part of the development consent application.

Examples of mitigation techniques to protect wildlife include badger sets [left, top] and Great Crested Newt fencing [left, bottom]

Environmental Impact Assessment

In accordance with the requirements of the Act, our proposals are subject to an **Environmental Impact Assessment** (EIA) before the application can be made. The purpose of the EIA is to:

- Look at current environmental conditions
- Identify potential significant environmental effects that may arise
- Propose ways to reduce impacts through mitigation by design or other measures

The ultimate aim is to design a project with minimal environmental impact or disruption to the community during construction and operation. We have conducted a review of environmental designations and a full suite of environmental surveys to establish the baseline for assessing the project and determining the impacts on e.g.

- Birds & ecology
- Traffic & transport
- Fish & marine ecology
- Archaeology
- Shipping & navigation
- Socioeconomic
- Landscape
- Seascape

3

Rampion 2 Initial Proposals

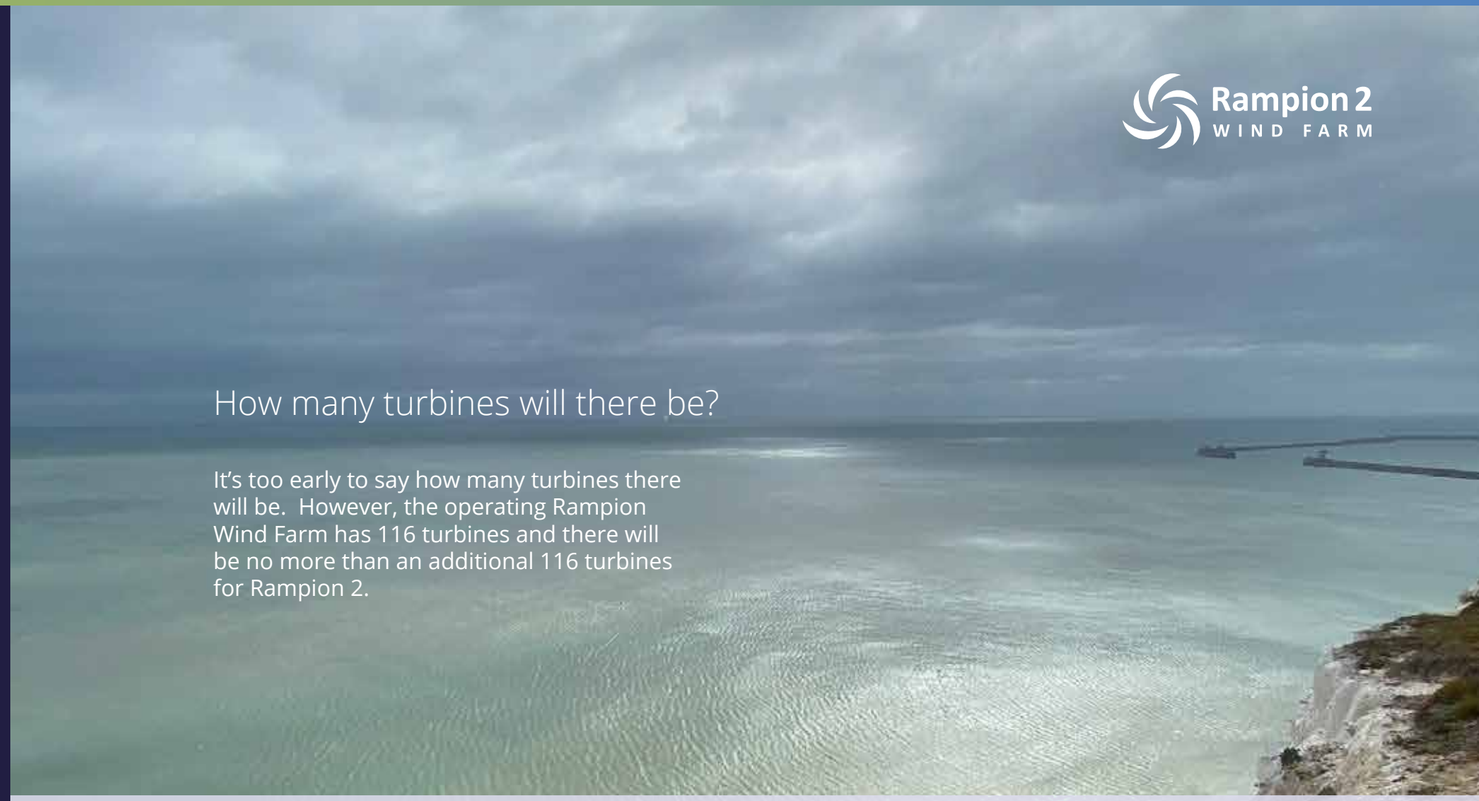
A wind farm project is made up of several major physical components:

- Wind turbines and foundations
- Offshore substation(s)
- Inter-array cables
- Offshore export cables
- Landfall (where cables come ashore)
- Onshore cable circuits
- An onshore substation

Every physical component is integral to a wind farm project and without any one of these the wind farm wouldn't work. Each individual component requires a different section of land or sea and each may encounter unique engineering and environmental challenges.

If a project of this scale is to be successfully consented and built, the physical components must be collectively designed such that they work together as a unit, while being individually assessed to mitigate and minimise impacts on the environment and the community.

The first step in the development process is to understand hard or fixed constraints, which cannot be overcome. These constraints may restrict a particular project component to a specified location or may prevent a project component from being located in a particular local area.



Rampion 2 WIND FARM

How many turbines will there be?

It's too early to say how many turbines there will be. However, the operating Rampion Wind Farm has 116 turbines and there will be no more than an additional 116 turbines for Rampion 2.

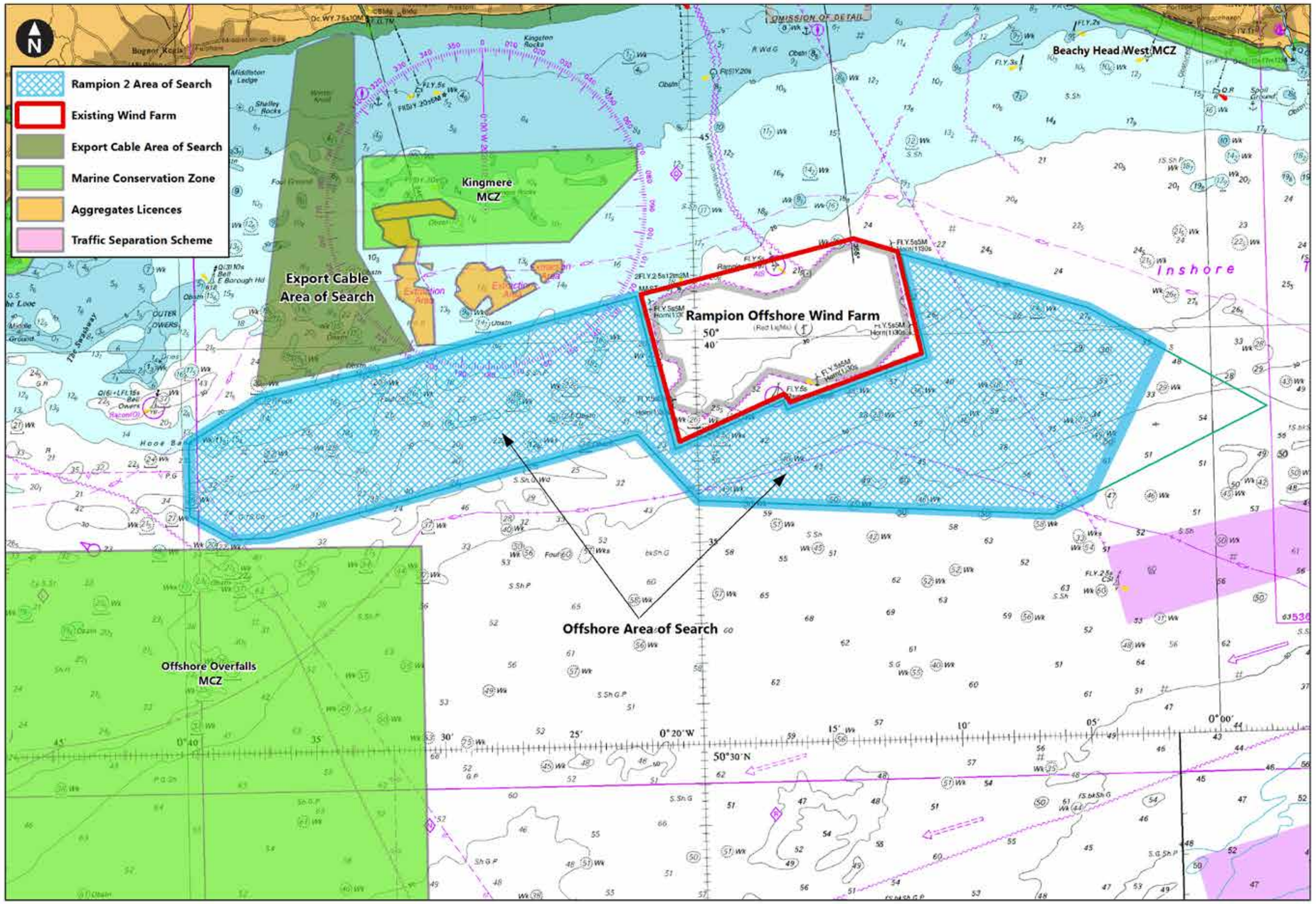
Offshore Area of Search

The chart on the next exhibition panel shows the Area of Search (AoS) for the Rampion 2 offshore wind farm. This does not mean that turbines will be erected everywhere across the AoS, but rather that we need to explore all the constraints in order to identify the best and optimum site for a wind farm somewhere within the AoS.

This will be determined following consultation with stakeholders and communities, alongside the data collected from a range of technical and environmental surveys.

Technical surveys will assess precise water depths, tidal flows, seabed geology and ground conditions, areas of shallow gas, wrecks and potential unexploded bombs.

Environmental surveys will assess the benthic (seabed) environment, marine mammals, birds, fish and shellfish.



Offshore Area of Search

The chart shows the Area of Search (AoS) for the Rampion 2 offshore wind farm. This does not mean that turbines will be erected everywhere across the AoS, but rather that we need to explore all the constraints in order to identify the best and optimum site for a wind farm somewhere within the AoS.

Why can't the turbines be located further offshore?

The English Channel is the busiest shipping lane in Europe, which is situated between the two pink areas on the AoS chart. The pink areas themselves show the Traffic Separation Scheme (TSS), which must be kept clear of permanent obstructions as it acts as a safety buffer between the English Channel shipping lane and the Inshore Traffic Zone.

To the west of the TSS is the shipping lane that takes traffic between the English Channel and Portsmouth & Southampton ports, so there is no option to extend the Area of Search to the south.

4

Connecting to the grid

One of the first requirements for a wind farm development is to establish where the power can be connected to the national grid network.

Rampion 2 could generate three times the amount of power as the operating Rampion wind farm, making it equivalent to the size of a large power station.

While we would like to connect the power nearer the coast, a project producing this level of power generation can't connect to the distribution grid, which serves our homes and businesses. There isn't the available capacity and if there were, it would require a number of offshore cables connecting into various populated locations, each requiring a new substation.

Connection options and Connection Agreement

We commissioned National Grid to conduct a Feasibility Study for connection into their system and we also investigated a number of alternative connection points at different 'nodes' along the transmission grid. Other options involved more lengthy and costly offshore export cables, which are 5-10 times the cost of onshore cables and would render the project commercially unviable.

At the second closest connection node at Lovedean in Hampshire, we looked at some potential onshore cable routes but not only were they 10km longer, they would also require a significantly longer section through the South Downs National Park and were more environmentally challenging.

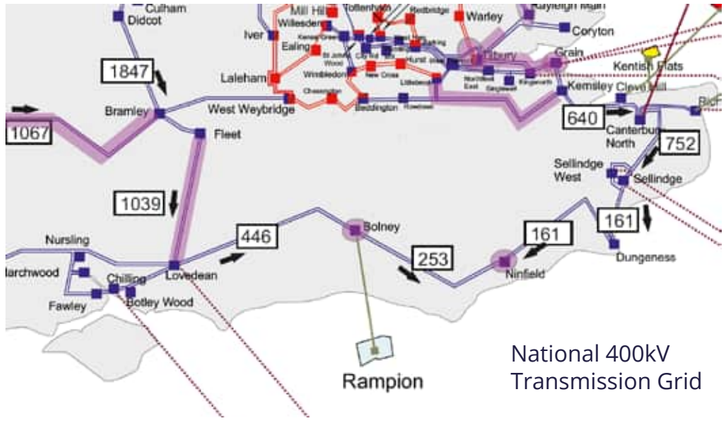
National Grid, who makes the decision on where we can connect to their system, determined the connection point as Bolney in Mid Sussex. This was based on technical criteria and Grid Code obligations to the regulator (Ofgem). Our agreement is for a connection in 2028/29.

Bolney is by far the closest connection point requiring the shortest onshore and offshore cable routes with the shortest route through the national park and the least disturbance to local ecology, marine features and other sea users.

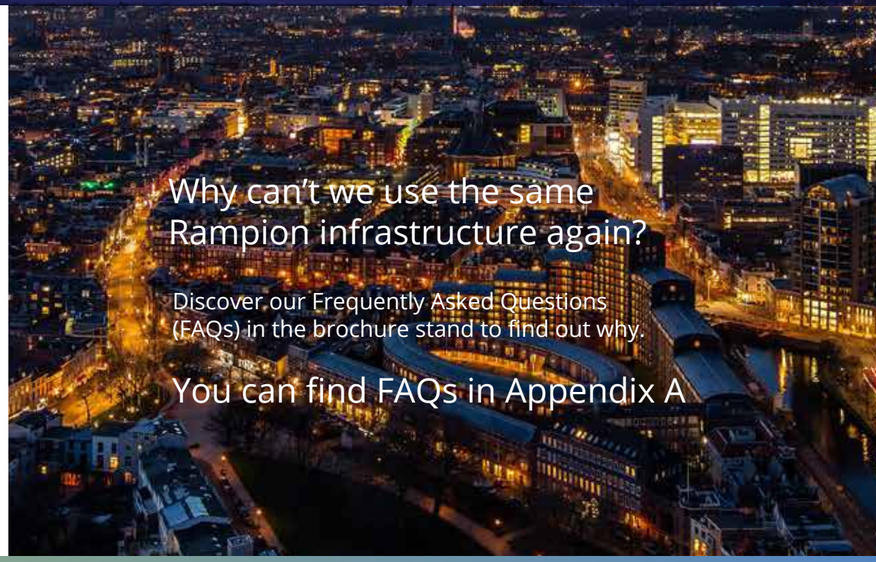
The Transmission Grid or 'electron motorway'

We must connect to the high voltage (400kV) transmission grid, what we sometimes call the, 'electron motorway', which is designed to take power from large generating plant.

The transmission system runs west to east inland from Hampshire, through Sussex to Kent and ultimately to London, to carry the power. Every so often along the network are 'nodes' where major generators can connect their power and where lower voltage distribution networks (like the equivalent of A and B roads) can tap into the power to feed the southeast region, one of the highest electricity demand centres in the country.



National 400kV Transmission Grid



5

Onshore Cable Route

The ultimate objective is to connect the power from the wind farm to the transmission grid at Bolney using the shortest, least-impact cable route.

The cable circuits will be buried underneath the seabed and we will bury the onshore cables underground for the entire cable route, so the impacts will be temporary in nature during construction only and there will be no pylons.

Rampion 2 WIND FARM

Cable route scoping boundary

The cable area of search or 'scoping boundary' sets out a broad envelope within which we assess the technical constraints and environmental sensitivities, to identify the least impact 50m-wide cable route. This process involves input from statutory bodies and other stakeholders to help inform what assessments and sensitivities need to be taken into account.

Landfall

The first challenge is to identify where we can bring the cables ashore, known as 'landfall', where the offshore cables are joined to the onshore cables. Ideally, this location would be in the most direct path between the wind farm and Bolney. However, the Sussex coastline is a densely populated linear urban development, which severely restricts the number of potential landfall options.

Why can't we take the same route as the existing Rampion infrastructure?

See our FAQs in Appendix A

While at first sight it may appear that there are one or two areas of open space along the coast e.g. Goring Gap, as the cables move further north they would hit a dead end as they meet settlements which we are unable to drill under.

The open space that is closest to a direct line between the offshore Area of Search and Bolney, that also has the potential for a cable route to continue north, is Climping Beach just to the west of Littlehampton Harbour. We're aware of flood risks in this location, so we will be drilling under the beach to the agricultural land beyond. Having identified the optimum landfall location, we then set out to investigate a broad corridor between Climping and Bolney.

Due to the east-west linear nature of the South Downs National Park, crossing it with the cable route will be unavoidable. We are designing the route to be as short as possible through the South Downs and we will introduce construction methods to ensure swift and successful reinstatement of the landscape.

Onshore cable route

During construction

After reinstatement

To date, we have carried out a constraints mapping exercise and a number of site surveys to identify sensitive or challenging features, such as:

- Steep slopes
- Ancient Woodland
- Sites of Special Scientific Interest (SSSIs)
- Chalk grasslands
- Wildlife habitats
- Archaeology
- Local Nature Reserves

Where possible, we will avoid these sensitive locations but in short sections where it may be unavoidable, we will introduce construction methodologies and other mitigation measures to protect wildlife, landscape and archaeology during construction.

6

Cable route construction

The underground cable route is constructed in a way to minimise impacts, as far as possible.

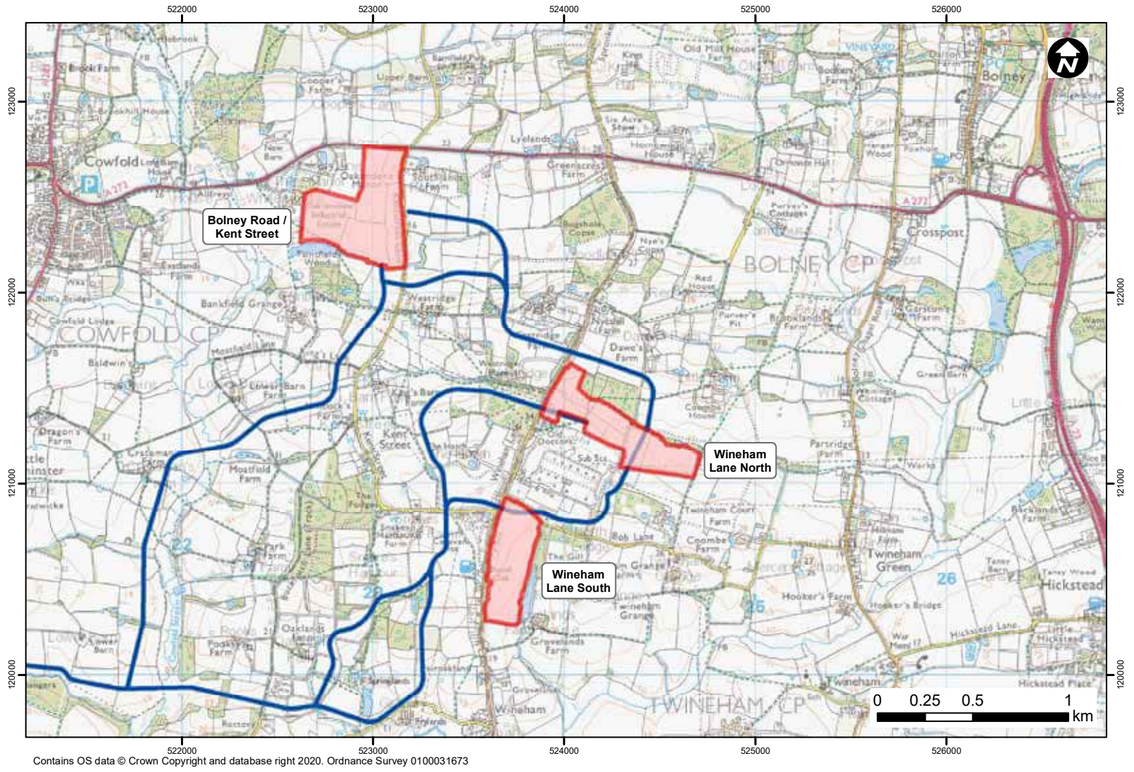
To bury the cable, we will use a trench and ducting methodology, whereby we dig trenches, install ducting and backfill the trenches to allow for quick reinstatement of the landscape. We will come back at a later date to pull the cable through the ducting, using small joint bays at approximately 1km intervals along the route, as the cables come in rolls of 1km sections.

To cross particularly challenging obstacles such as rivers, railways and major roads, we will use a horizontal directional drilling (HDD) technique to tunnel below these features. This avoids impacts on the river environment, while keeping traffic and trains running throughout construction.

Watch the flyover video of our proposed indicative cable route which we believe is the least impact. The video also includes a number of multiple branch options in some sensitive locations, where we are seeking feedback as we further refine the route.

Onshore substation

Somewhere near the connection point at Bolney, a new Rampion 2 onshore substation is required to transform the power from the wind farm up to the required voltage (400kV), in order to connect to the transmission grid.



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The onshore substation would be the **only permanent onshore above-ground structure** for the entire project, which requires an area of 4.5 hectares for the substation itself, in addition to areas for landscaping, access and drainage, plus construction laydown areas, compounds and access tracks.

We initially investigated seven substation search areas within 5km of the Bolney connection, to seek to identify the site of least impact. Four of these have now been discounted for a combination of reasons, such as:

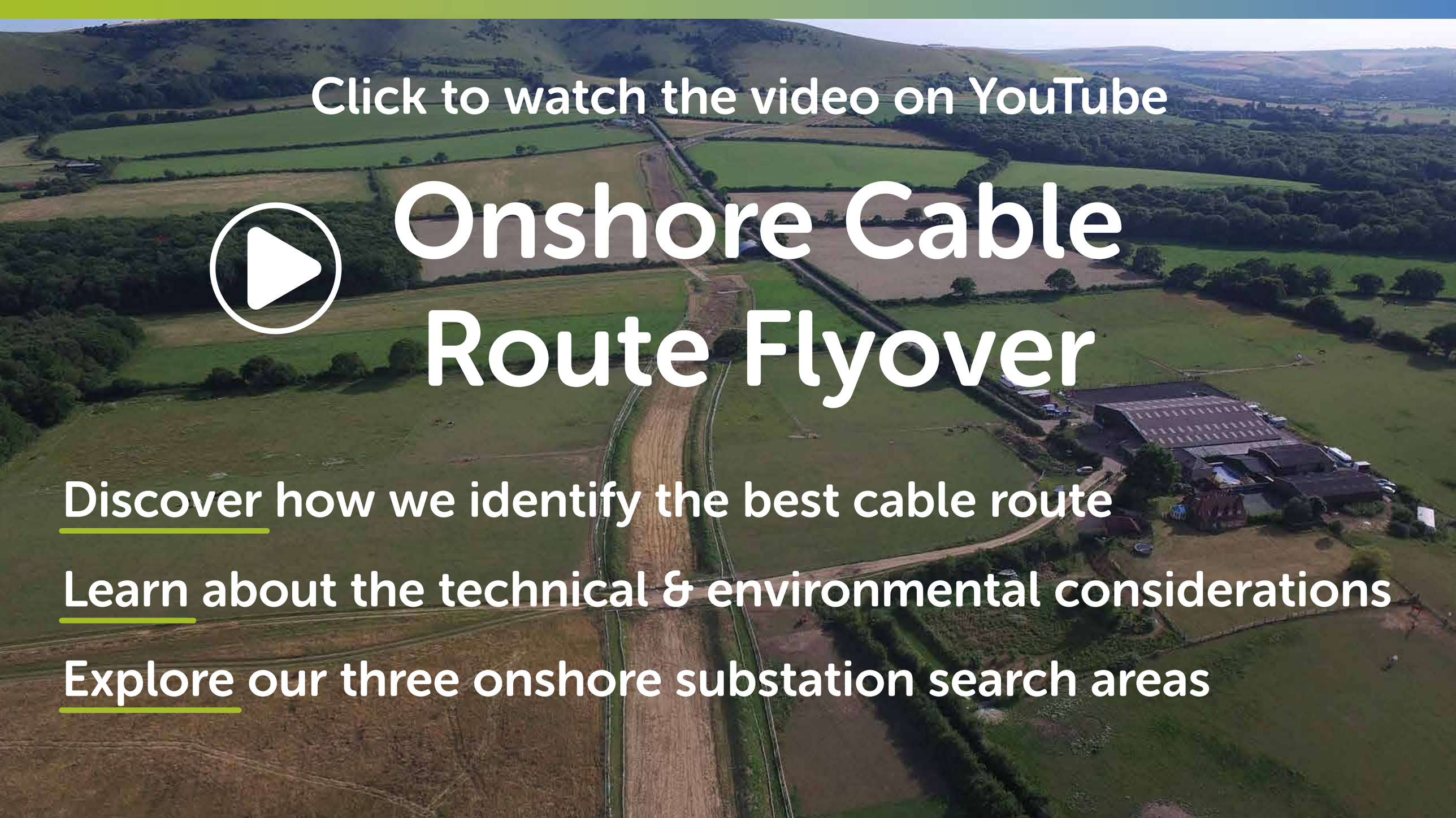
- Ancient Woodland and biodiversity
- Flood Zones and associated watercourses
- Sewage works and potential ground contamination
- Insufficient overall size to support the construction activities and landscaping
- Proximity to existing properties

A more detailed explanation of the assessment and ranking / selection will be included in the EIA (Alternatives Considered chapter) in due course.

We are liaising with the parish councils local to the three remaining substation search areas and seeking feedback through the informal and formal consultations, to understand local community concerns. We are inviting feedback on the pros and cons of the three search areas, while also seeking input to help identify any parts of those areas that are more or less favourable for locating the permanent substation equipment.

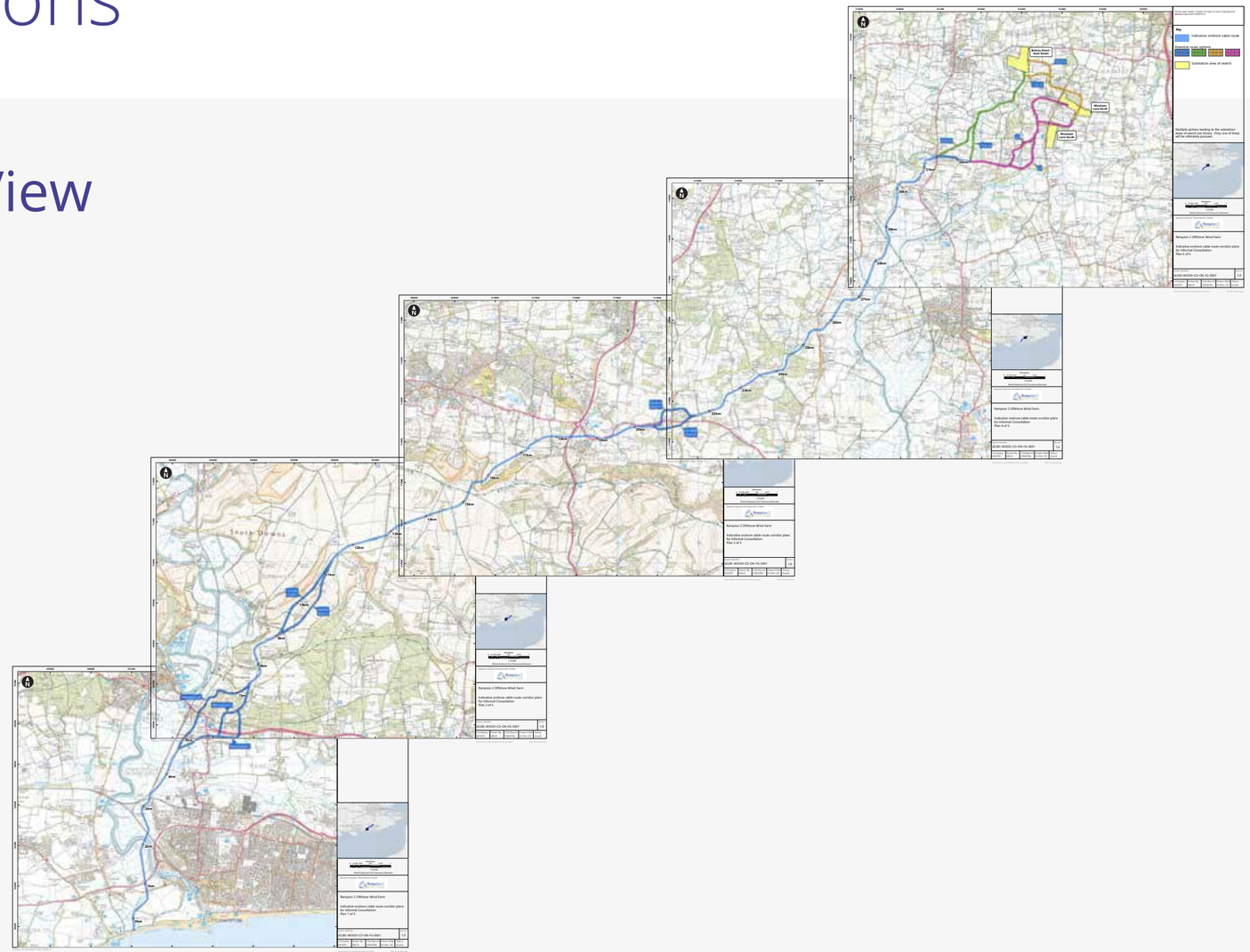
Taken together with the results from our technical and environmental surveys, we will then be in a better position to progress the least impact search area and identify the best site for the substation equipment


Click to watch the video on YouTube
Why Rampion 2?
Explore the reasons why we need more wind power
Learn about the consenting & consultation process
Discover how we connect power to the grid


Click to watch the video on YouTube
Onshore Cable Route Flyover
Discover how we identify the best cable route
Learn about the technical & environmental considerations
Explore our three onshore substation search areas

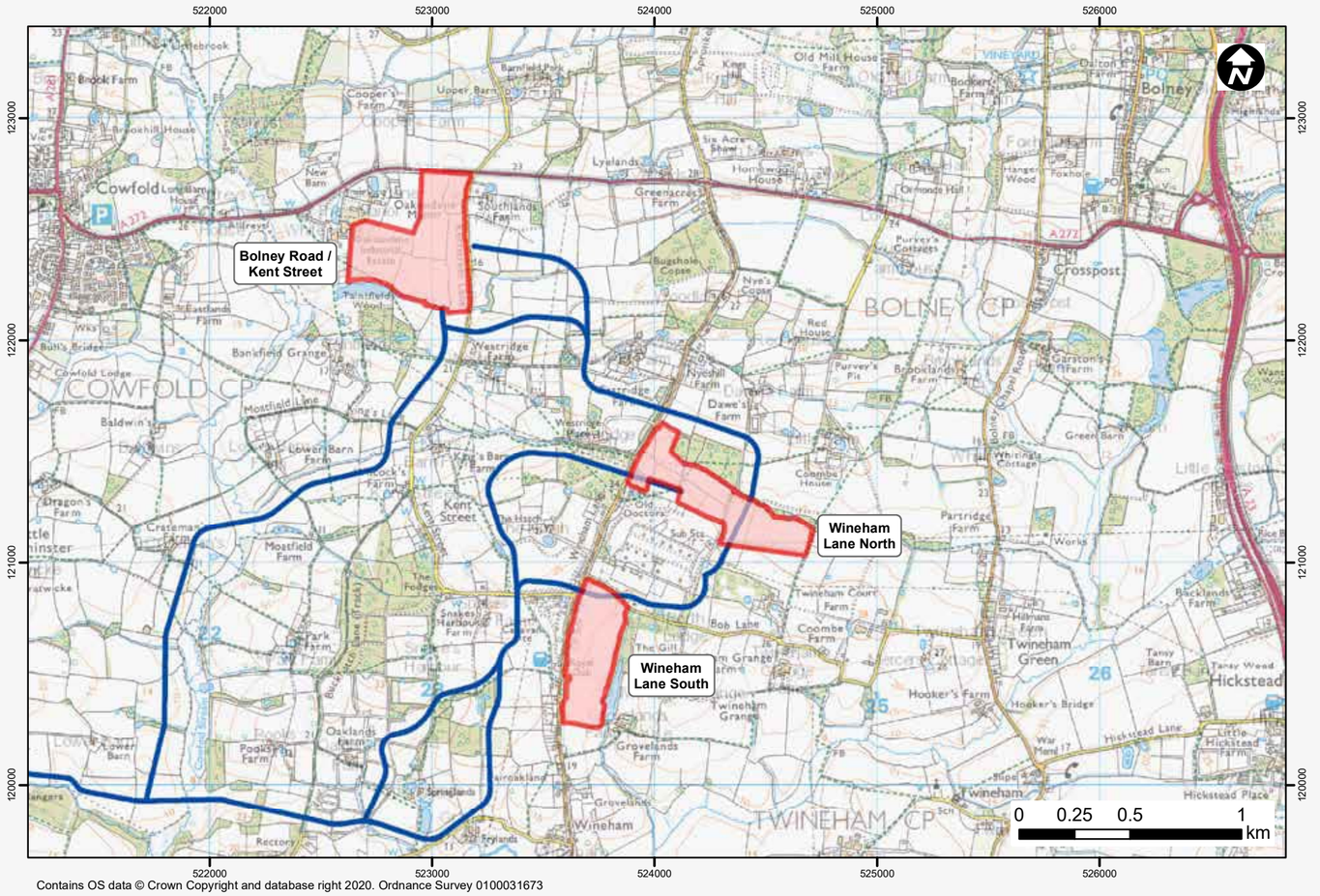
Cable Route Options

Go to Appendix B to View 5 maps in large scale



Substation Search Areas

Go to Appendix C to view the 3 search areas in large scale



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7

Project Benefits

The existing Rampion project:

Supplies clean, green electricity for the equivalent of almost 350,000 homes, that's around half the homes in the whole of Sussex.

Saves around 600,000 tonnes of CO_2 every year.

The Rampion 2 project could:

Produce clean, green electricity for the equivalent of over 1 million homes!

Save around 1.8 million tonnes of CO_2 each year.

This would make a significant contribution to meet Government targets for offshore wind and help tackle climate change.

Rampion in the community

Rampion has already:

- Employed **65 full time, permanent staff** at the Operations Base in Newhaven Port
- Supported **8 students** on our graduate scheme and took on **8 apprentices** by 2019, some of whom are now fully qualified turbine technicians
- Acted as a catalyst for the **regeneration of Newhaven Port**
- Spent **£1.6 million to support 114 community projects** from our £3.1 million Rampion Fund, benefiting almost 1 million people across Sussex, with the remaining Fund available until 2027
- **Opened a Visitor Centre** on Brighton seafront, which is free for all, to tell the climate, energy and Rampion story in a fun and engaging way

Technological advancement

Wind turbine technology has rapidly advanced in recent years, producing much more power per unit.

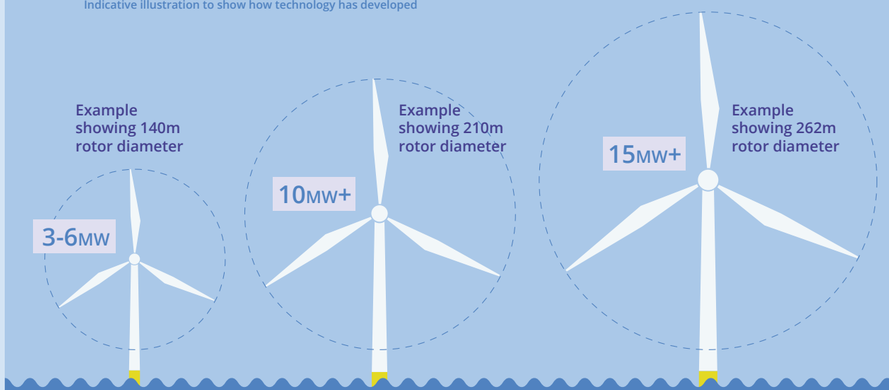
A 50% increase in tip height more than doubles the power output of a wind turbine and the power of offshore turbines has increased 5-fold in just 20 years.

It's early days in the development process and a few years before we'll be in a position to order turbines. So, for the purpose of our EIA we are assessing a worst-case scenario for up to 2.3 x the existing Rampion turbine height, but in reality it's unlikely to be more than double the height.

With an assumption that the turbines will be 75% taller than the existing turbines, the power output per turbine would be around 3 x the existing Rampion turbines.

Turbine technology development

Indicative illustration to show how technology has developed



Rampion 2 WIND FARM

Did you know?

Wind is now an essential renewable resource for powering our modern world with clean, green energy and the UK is the European and World leader in offshore wind generation.

In 2019, UK wind energy:

- Generated electricity to power the equivalent of nearly 18m homes
- Became the second largest power source, providing 20% of electricity
- Reduced CO_2 emissions by nearly 29 million (m) tonnes, saving 14m tonnes from offshore wind alone

In 2020, UK wind energy:

- Broke a record to provide 40% of our electricity on one day
- Contributed to coal-free electricity generation for a record 67 days in a row

The offshore wind industry aims to double jobs to over 27,000 and invest nearly £50billion in UK infrastructure by 2030.

8

Current Status

- Seabed agreement for lease signed with The Crown Estate (landlord of the seabed), within which a refined wind farm proposal will be formed over the coming months
- National Grid have confirmed a Connection Agreement into the high voltage 400kV transmission grid at Bolney, in 2028/2029
- Early discussions held with 11 Local Planning Authorities, Parish Councils, MPs, South Downs National Park Authority, Marine Management Organisation, Natural England, Historic England and other national bodies
- Scoping Opinion received from the Planning Inspectorate informing what is required to be assessed
- A number of technical and environmental surveys carried out, informing the onshore and offshore project elements e.g. full offshore site geophysical survey, vessel traffic and ecological surveys
- Early assessment of an onshore cable route Area of Search, leading to identification of an indicative cable route and some options for consideration
- Informal consultation underway, seeking feedback of local issues in relation to the onshore and offshore Areas of Search

Rampion 2 WIND FARM

Next Steps[1]

Feb-May 2021
Analyse feedback alongside results of technical and environmental surveys, to refine proposals and produce Preliminary Environmental Information Report [2]

May-Jul 2021
Formally consult with stakeholders and communities on:
- refined proposals, including a defined onshore cable route
- information on construction and mitigation methodologies
- photomontages taken from a range of Sussex viewpoints

Jul-Nov 2021
Analyse feedback from formal consultation, determine onshore substation site selection, further refine proposals, produce Consultation Report and detailed Environmental Statement

Late 2021
Indicative timing for formal consent application

2022-early 23
Consent Examination Process

Should consent be awarded in 2023...

End 2024
Earliest possible investment approval

2025 / 2026
Earliest possible construction work commences

2028 / 2029
Rampion 2 project fully operational and connected to the grid

1. This is an indicative project timetable, which is subject to change, particularly in light of the continuing Covid situation. We will only be carrying out activities where it is safe to do so and will use virtual consultation tools until it is safe to meet face to face.

2. We will be carrying out an assessment of construction traffic impacts (transport, noise, air quality) in the Preliminary Environmental Information Report, which will be available during the formal consultation. This will include a cumulative assessment taking into consideration other local construction projects that are likely in the timeframe of the construction of Rampion 2.

9

We want to hear from you

For this first round of consultation, we are keen to hear any local Issues and constraints you think we need to take into account within the onshore and offshore areas of search, as we look to refine the proposals.

What are the local issues that matter to you?

Is there anything you think we may have missed?

Online feedback form

The best way for you to give your feedback is by using the feedback form: Click here to complete your feedback form

Email or phone

Should you have any questions or points of clarification about the project or consultation, you can:

Email us at rampion2@rwe.com

Call us on 0800 2800 886 (Freephone)

Book a virtual meeting

Should you wish to have a virtual meeting with members of the Project Team, please use our interactive booking system here.

If you are a member of a community group or should you have any family, friends or colleagues who you think may be interested, please feel free to convene a group meeting with us, as it will help us maximise our reach to a wider audience.

Rampion 2 WIND FARM

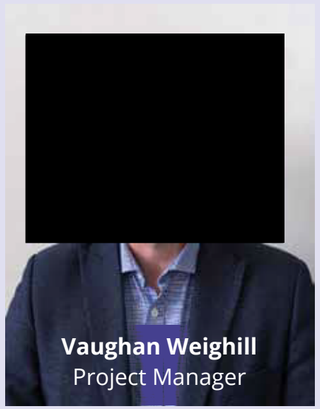
Covid19 Restrictions

We are all working in unusual times and while we would much prefer to meet you face to face, we have had to close our Worthing Office since March and unfortunately, we are unable to hold public exhibitions as we did for the original Rampion project.

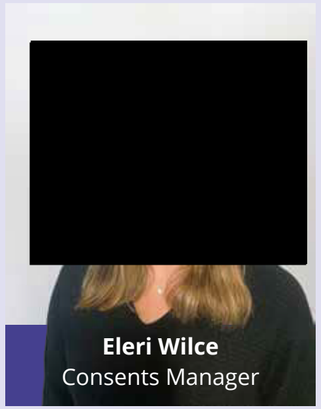
We hope you have found our Virtual Village Hall a useful tool to learn about the development process, explore our initial proposals and provide your feedback.

Meet the team

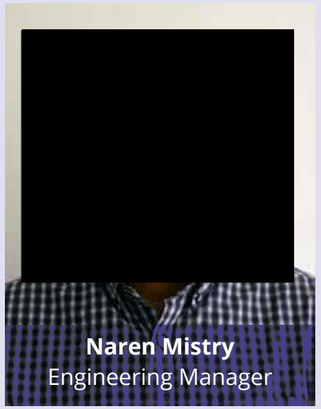
We would like to build on our existing relationships from the Rampion project, while also reaching new communities who weren't so involved the first time around, so we can remain a long-term, good neighbour of the Sussex community.



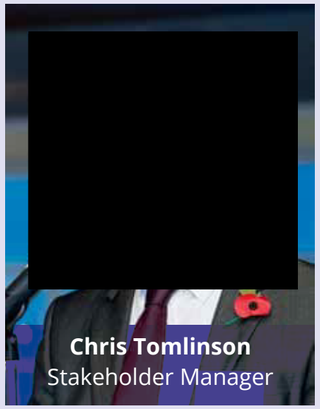
Vaughan Weighill
Project Manager



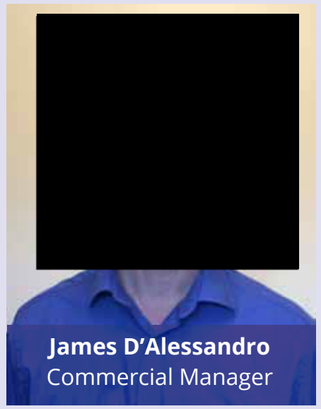
Eleri Wilce
Consents Manager



Naren Mistry
Engineering Manager



Chris Tomlinson
Stakeholder Manager



James D'Alessandro
Commercial Manager


Click to watch the video on YouTube
How we constructed
The Rampion Wind Farm

Appendix

A Frequently Asked Questions

B Cable Route Options

C Substation Search Areas

D Information for landowners

E Scoping Report

F Rampion Fund + Visitor Centre information

Frequently Asked Questions

Offshore Wind Farm

Why more wind turbines off the Sussex coast and not somewhere else?

There are 40+ offshore wind farms around the UK but only one on the south coast of England – Rampion. Yet, the southeast of England is one of the most densely populated regions in Europe and is therefore a huge demand centre for electricity, so we believe this site has potential to make a greater contribution to electricity generation, close to where the demand centre is located.

Elsewhere on the south coast, there are constraints to the west of the Isle of Wight such as the Jurassic Coast and deeper waters, whilst the grid is less robust given the lower population density in the southwest. There are constraints further east as the English Channel narrows off the Kent coast, which is also a very busy shipping area.

What is an Area of Search and why are they so large?

An Area of Search is initially identified for investigation, to find the optimum site for a wind farm or cable route. We need to carry out a number of technical and environmental surveys, which may discount areas from being suitable for development and we will also consider consultation feedback to help identify the best site for the project components, somewhere within the Area of Search.

Why is the project forecast to be so much bigger than Rampion?

The original Rampion Wind Farm was consented for up to 700 megawatts (MW) but in the end we built 400MW, being the optimum scheme for the technology and installation capabilities at that time. Since then, turbines have become more powerful, there have seen significant improvements in what can be technologically achieved, and a larger scheme reduces the cost of deployment thereby reducing cost to the end consumer.

Why is the maximum height of the turbines so much larger than the existing project?

Rampion 2 is effectively 10 years on from the original project and if consented, we will be placing turbine orders a decade later than we did for Rampion, with turbines not being installed until 2027 at the earliest. Technology has already advanced apace, so we need to make a sensible forecast of what the available turbine technology might be several years from now, to avoid consenting a technology that may no longer be available in the marketplace.

We therefore need to assess what we think will be the maximum turbine height when we come to construction, but we won't necessarily end up building that maximum case, e.g. Rampion had consent for 210m turbines, yet the Rampion turbines we built are 141m tall, two-thirds of the consented figure.

Frequently Asked Questions

Offshore Wind Farm

Why are there no visual representations of what the wind farm could look like?

At this stage we're still focusing on issues and constraints within the areas of search, to identify what the boundary for the scheme will be. This site boundary will be refined in response to constraints, the results of technical and environmental surveys and stakeholder feedback. We will be preparing visualisations once the scope and boundary has been sufficiently refined and these will form part of the second consultation in late spring/summer.

Of note, a wind farm is a low density development with around 1km spacing between the turbine towers, which are themselves only around 10m in diameter.

How has the operating Rampion Wind Farm been received by the Sussex community?

In 2010, we commissioned an independent survey to gauge the feeling of the Sussex community to the prospect of a wind farm off the Sussex coast. 80% felt positive. We carried out the survey again in 2019 after the turbines had been up and running for 18months and 85% of the respondents support the wind farm with only 4% opposing the scheme.

Onshore Electrical Infrastructure

Why didn't the original Rampion project include cables that could accommodate more electrical capacity?

At the time of investment in 2015, there was no immediate prospect of future Crown Estate leasing rounds for this area. The Crown Estate first suggested a round for extension proposals in 2018. The industry regulator requires every project to be designed and invested in an economic and efficient manner, to minimise cost to the end consumer, which prevents us from building speculative/spare capacity. The cables for the original Rampion project were therefore rated at a maximum capacity of 400MW.

Why can't the original Rampion cable route be used again, with the Rampion 2 cables running in parallel?

There are a number of pinch points where the land is congested with other constraints. The original landfall location at Brooklands Pleasure Park, in Lancing, is highly congested with underground pipes and services, as well as cables from the original Rampion scheme. There is insufficient remaining space to cross Teville Stream and drilling is not an option due to the location of an old landfill site.

Further north at Tottington Mount, the original cable route has utilised the available width on the crest of the hill, such that a parallel route would require 'benching' into the side of a hillside (such as used for roads/railways running across slopes), which is not an option due to visual and habitat sensitivities.

Frequently Asked Questions

Onshore Electrical Infrastructure

How much area is needed for the permanent onshore substation equipment?

The area to site the permanent substation equipment will be no greater than 4.5 hectares (ha). To put this into context, the three search areas for the substation are:

- Bolney Road/Kent Street – 21ha
- Wineham Lane North - 16ha
- Wineham Lane South - 13ha

How will you manage the noise, air quality, traffic and other disturbances during construction?

As far as possible, construction activity would be planned to minimise disruption to residents and businesses in the local area. We will be carrying out an assessment of construction impacts (transport, noise, air quality) in a Preliminary Environmental Information Report and we will consult on our proposed measures to minimise and mitigate impacts in a second, formal consultation in late spring 2021. This will include a cumulative assessment taking into consideration other local construction projects that are likely in the timeframe of the construction of Rampion 2.

Will the power be used in Sussex?

The electricity generated feeds into the National Grid system and is therefore distributed to where there is demand. Given the power is connected in Sussex, it is likely that much of the electricity generated by Rampion 2 will be consumed across a broad area covering Sussex. It's impossible to track electrons but the grid ensures the energy is not wasted, so on occasions when local demand is low and the wind farm is operating at peak, the power may be used further afield.

Continued on next page >

Frequently Asked Questions

More about wind power

Isn't offshore wind power expensive?

Major strides have been made in the past few years, effectively halving the cost of offshore wind with advances in technology, supply chains and economies of scale.

Offshore wind is becoming widely known as an established cost-effective low carbon source of generation, which will continue to play a vital role in helping the power sector decarbonise over the coming decade and beyond.

What happens when the wind doesn't blow?

Offshore wind speeds are higher and more consistent than onshore and whilst output will vary over time, offshore wind farms generate electricity around 85% of the time. If wind is not blowing in one region of the UK then it is likely to be generating power elsewhere in the country, and the national transmission grid has a diverse mix of other energy generators to ensure that supply and demand are always in balance.

What is the lifetime of the project?

Offshore wind turbines were forecast to have a lifetime of 20-25 years but as the first commercial offshore turbines have already been operating for nearly 20 years and technology has continued to advance, the predicted lifetime has increased to nearer 30 years. At the end of their life, the wind turbines will be removed from the seabed and if wind energy is still an essential requirement for our energy mix, they may be repowered with the latest technology of the day, but that would be subject to a new consent application and consultation at that time.

Continued on next page >

Frequently Asked Questions

Consultation questions

How will my feedback be used?

We very much welcome and value feedback from everyone and we will analyse all feedback to identify local issues and take them into account in shaping the project. The consultation feedback will be documented in a Consultation Report, which will be published to form an integral part of the consent application. Whilst we may not be able to accommodate every suggestion, we are committed to responding to issues raised in a fair and transparent manner.

If this is decided by central government, can local stakeholders really influence the project?

Although it's ultimately the Planning Inspectorate who examine the final application and make their recommendation to the Secretary of State, local authorities and other local stakeholders are statutory consultees to this process and their views hold a lot of weight. We also consider feedback from local communities across a wide area and will accommodate feedback where we can but if this is not possible, e.g. for technical, environmental, commercial or community reasons, we will explain why this is the case. The Consultation Report will record what we've taken into account, the changes we have made, and if we can't take feedback into account we will explain the reasons why we have been unable to do so.

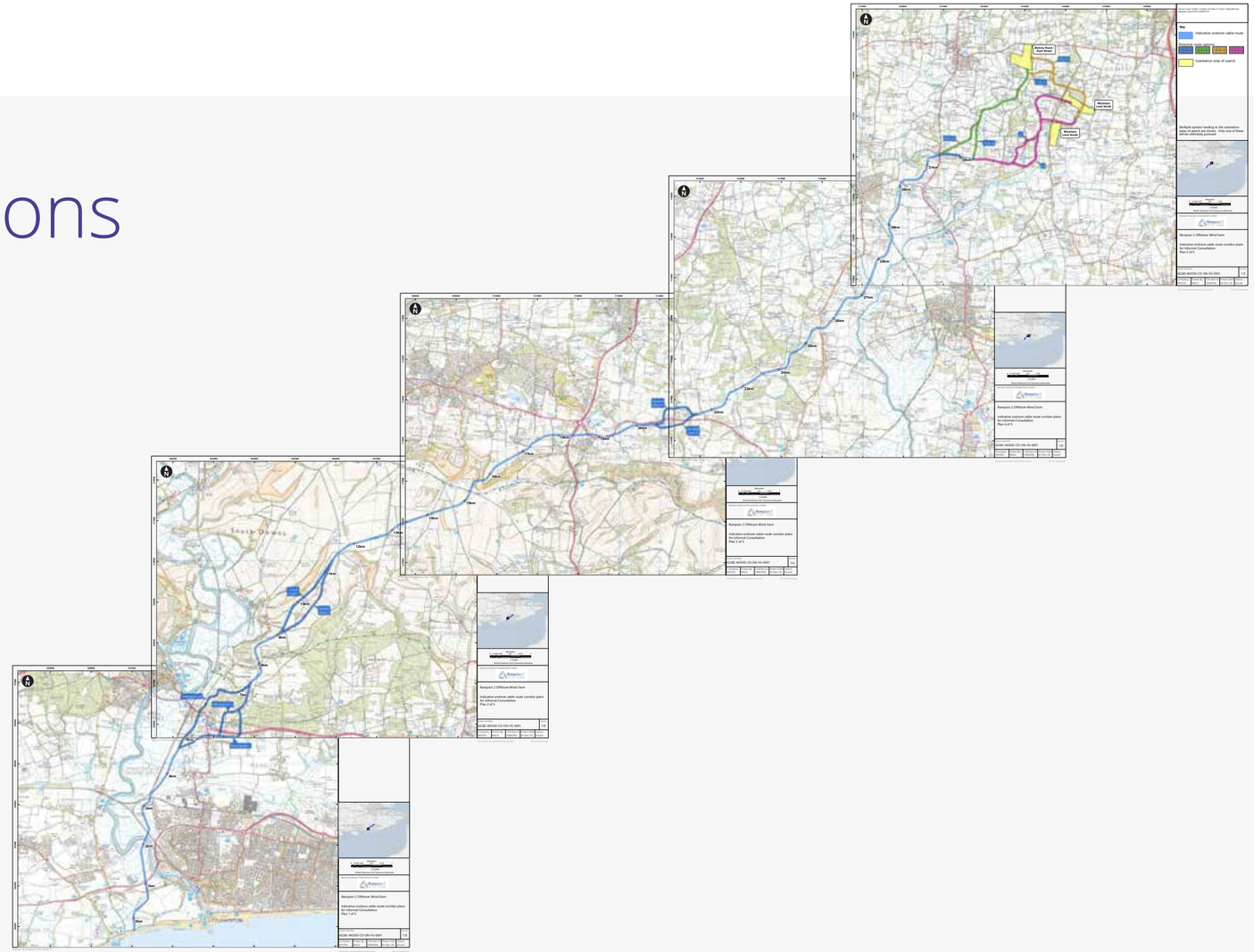
Is this my only opportunity to have my say?

No, this is only the first consultation where our intention is to attract high-level feedback on the general scope of the project and the local issues you think we should be taking into account in the areas of search. We will then refine our proposals in light of this feedback and the results from our technical and environmental surveys, before publishing more detailed plans for a second consultation in late spring / summer. We are currently working with local authorities to agree how this will be conducted to ensure a comprehensive and meaningful process, which we will publish in a Statement of Community Consultation in the spring.

Appendix B

Cable Route Options

5 maps in large scale on following pages



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Key

- Indicative onshore cable route corridor
- Potential route options

Kilometres
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1:25,000
British National Grid Transverse Mercator

Rampion Extension Development Limited

Rampion 2 Offshore Wind Farm

Indicative onshore cable route corridor plans for Informal Consultation
Plan 1 of 5

System Identifier:	Version:
42285-WOOD-CO-ON-FG-0001	1.0

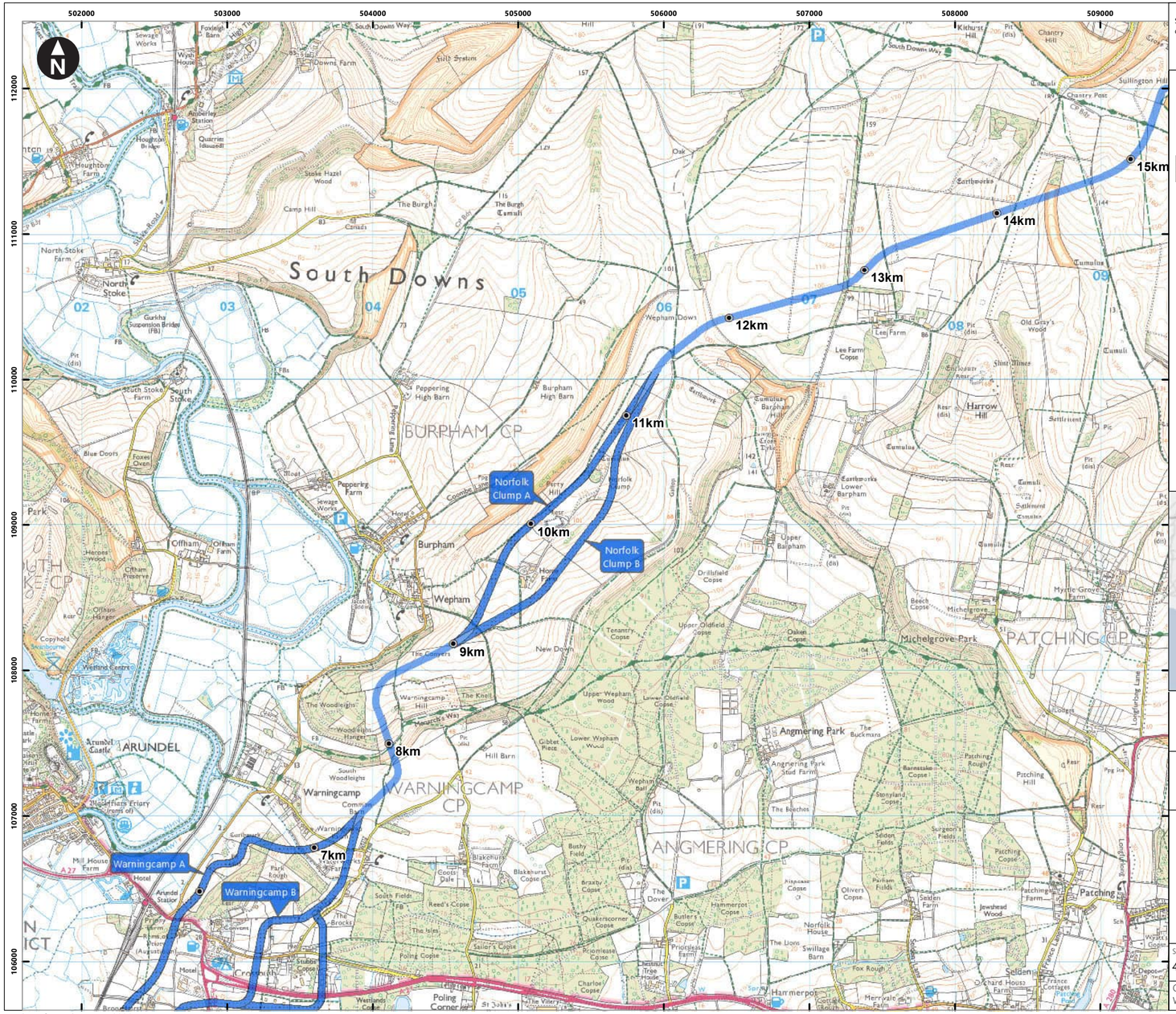
Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WOOD	MILLI	OSMONL	03-Dec-20	Issued

Cable route options

Map 1 of 5

Document uncontrolled when printed

ISO A3 Landscape



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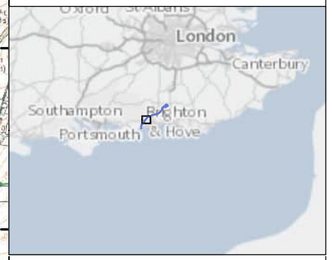
Key

Indicative onshore cable route

Potential route options



Kilometres
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British National Grid Transverse Mercator

Rampion Extension Development Limited

Rampion 2 Offshore Wind Farm

Indicative onshore cable route corridor plans for Informal Consultation
Plan 2 of 5

System Identifier:	Version:
42285-WOOD-CO-ON-FG-0001	1.0

Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WOOD	MILLI	OSMONL	03-Dec-20	Issued

Cable route options

Map 2 of 5

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Key

- Indicative onshore cable route
- Potential route options

Kilometres
0 0.125 0.25 0.5 0.75 1
1:25,000
British National Grid Transverse Mercator

Rampion Extension Development Limited

Rampion 2 Offshore Wind Farm

Indicative onshore cable route corridor plans for Informal Consultation
Plan 3 of 5

System Identifier:				Version:
42285-WOOD-CO-ON-FG-0001				1.0
Company: WOOD	Drawn By: MILLII	Chk/Aprvd: OSMONL	Drawn Date: 03-Dec-20	Status: Issued

Version of template: Nov 2020 V1

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Rampion 2 WIND FARM

Cable route options

Map 3 of 5

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Key

- Indicative onshore cable route
- Potential route options

Kilometres
0 0.125 0.25 0.5 0.75 1
1:25,000
British National Grid Transverse Mercator

Rampion Extension Development Limited

Rampion 2 Offshore Wind Farm

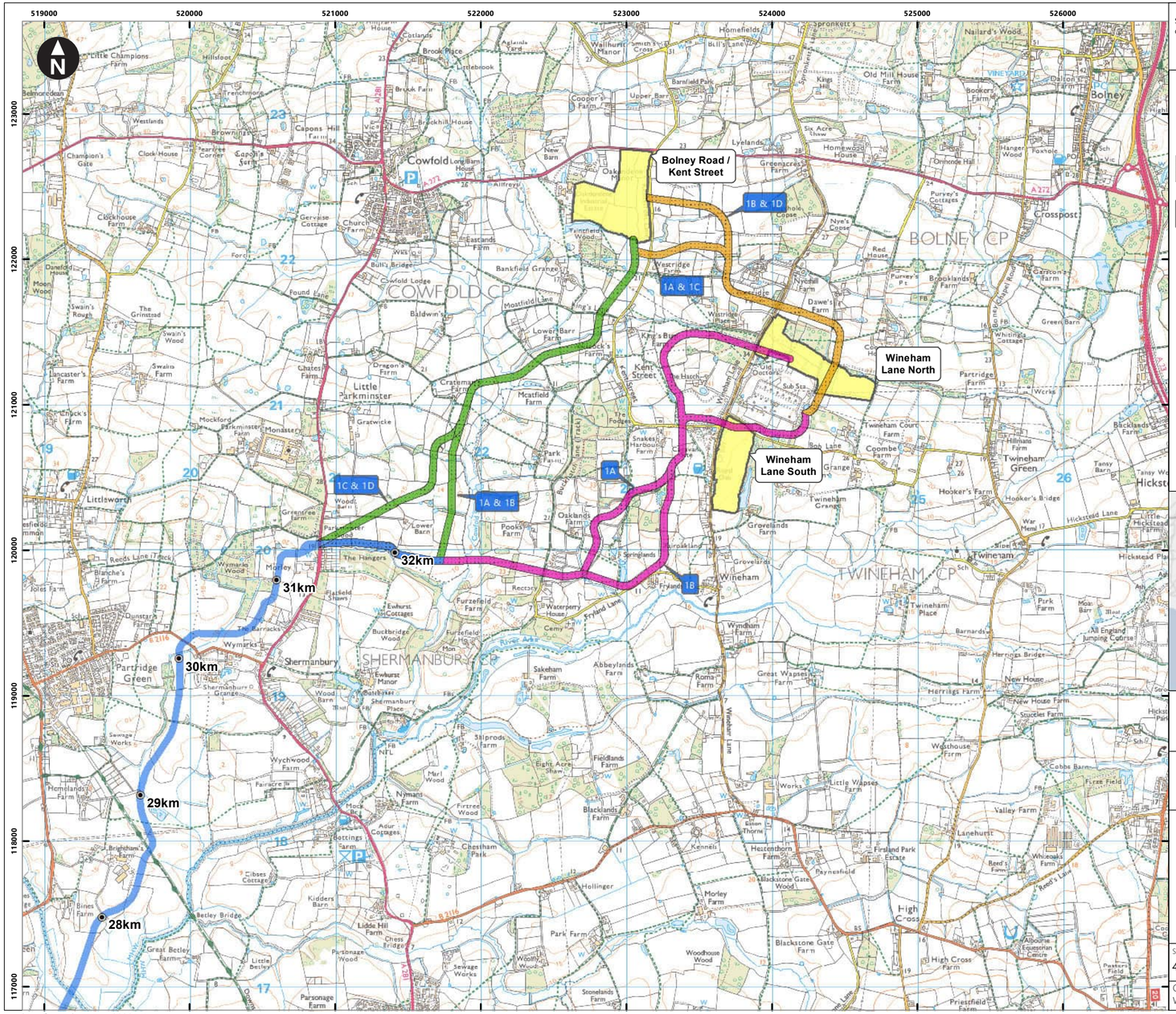
Indicative onshore cable route corridor plans for Informal Consultation
Plan 4 of 5

System Identifier:	Version:
42285-WOOD-CO-ON-FG-0001	1.0

Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WOOD	MILLI	OSMONL	03-Dec-20	Issued

Cable route options

Map 4 of 5



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Key

Indicative onshore cable route

Potential route options

Substation area of search

Multiple options leading to the substation areas of search are shown. Only one of these will be ultimately pursued.

Kilometres
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1:25,000
British National Grid Transverse Mercator

Rampion Extension Development Limited

Rampion 2 Offshore Wind Farm

Indicative onshore cable route corridor plans for Informal Consultation
Plan 5 of 5

System Identifier:	Version:
42285-WOOD-CO-ON-FG-0001	1.0

Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WOOD	MILLI	OSMONL	03-Dec-20	Issued

Version of template: Nov 2020 V1

Document uncontrolled when printed

ISO A3 Landscape

Rampion 2 WIND FARM

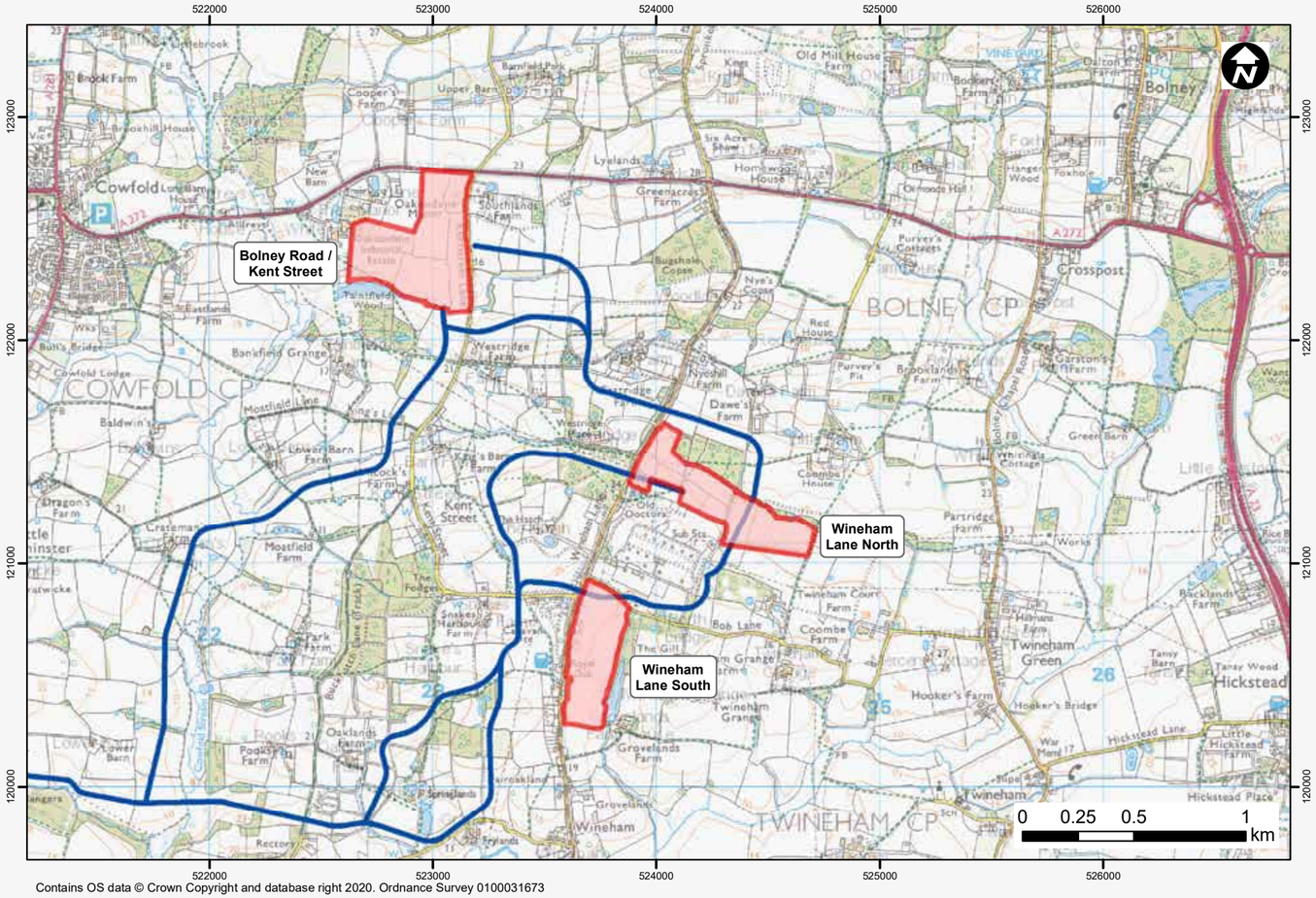
Cable route options

Map 5 of 5

Appendix C

Substation Search Areas

3 search areas in large scale on following pages



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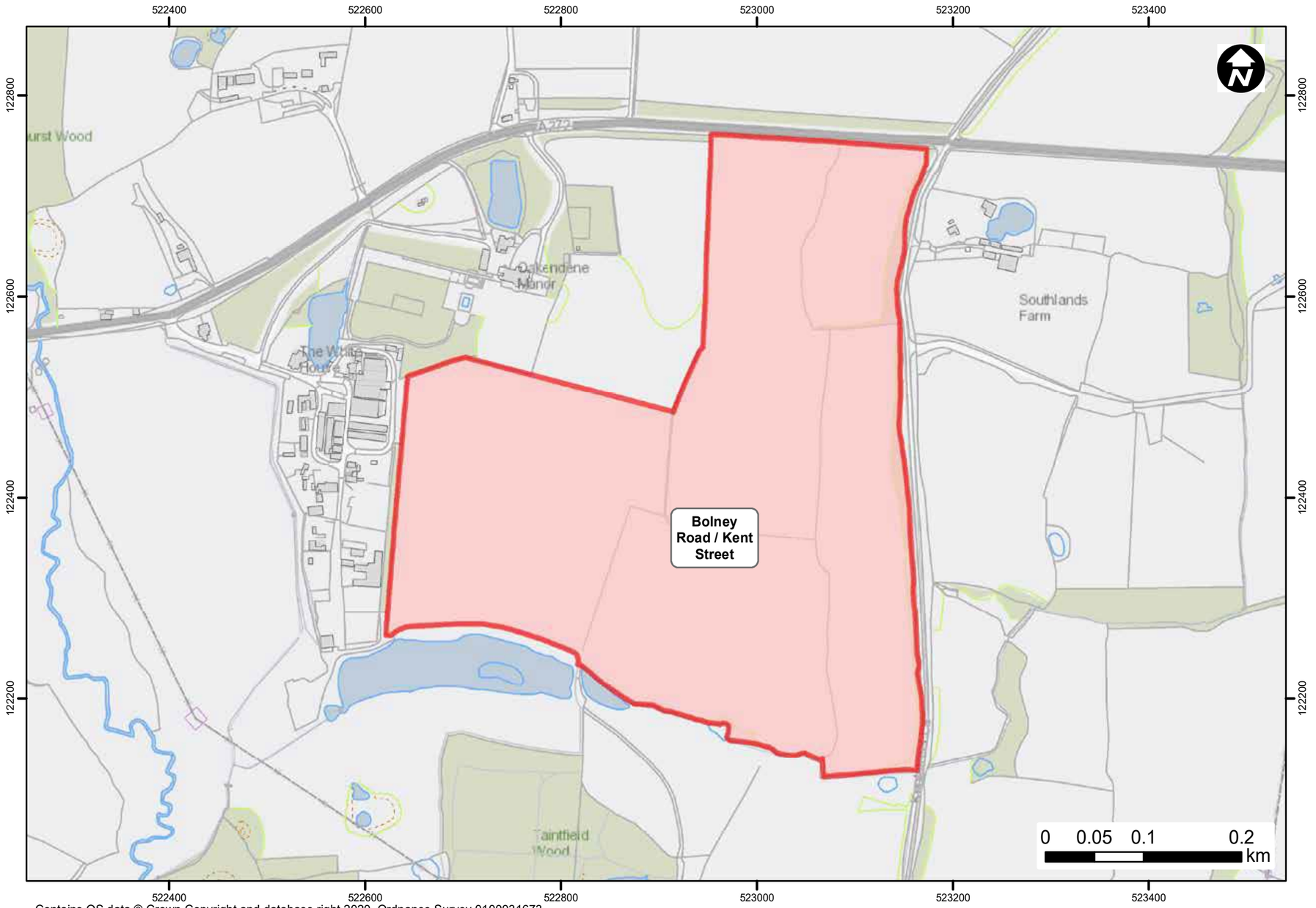

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Rampion 2 WIND FARM

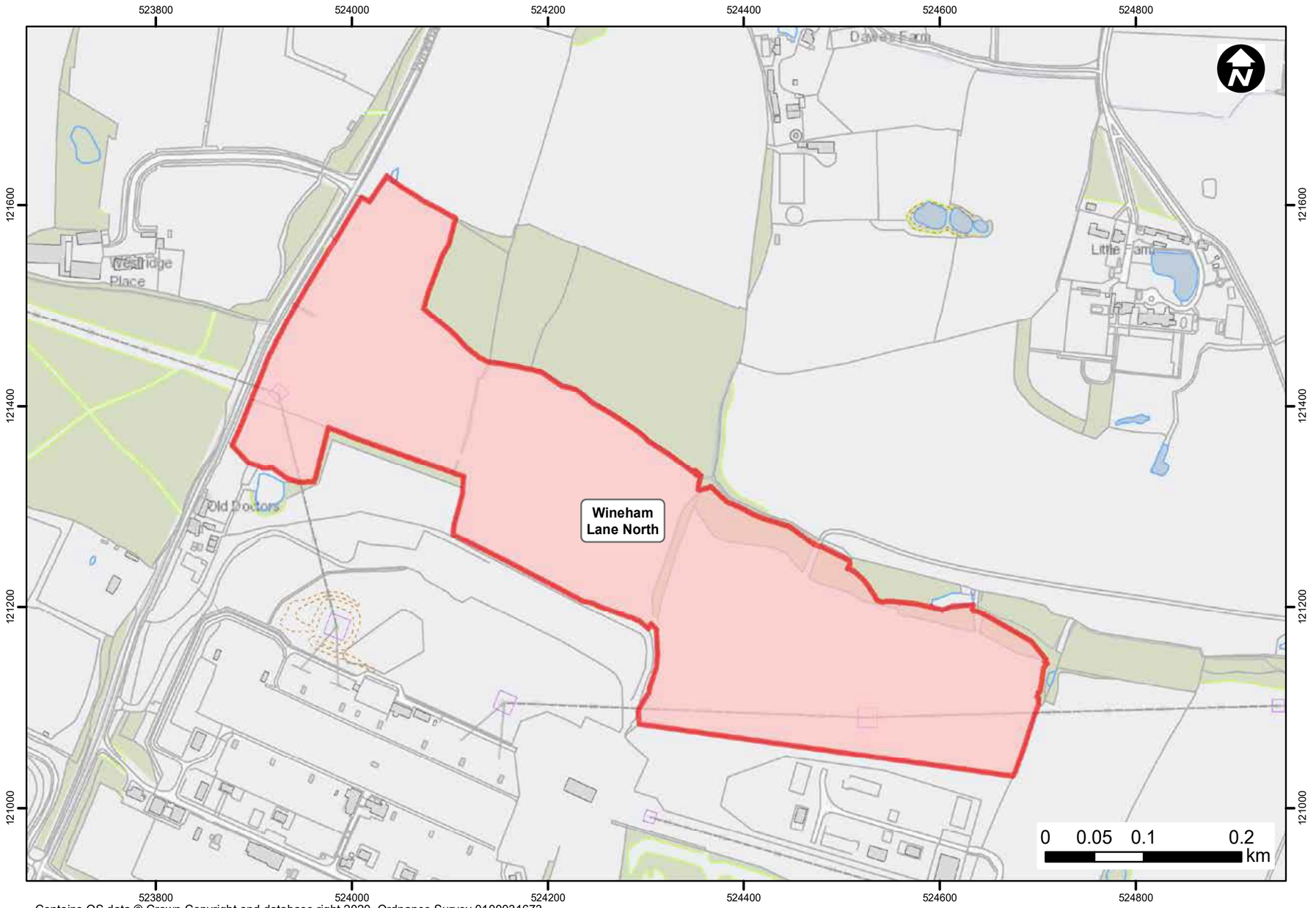
SEARCH AREA
For potential onshore substation
Area 1 of 3

Rampion 2 WIND FARM

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Ordnance Survey 0100031673

SEARCH AREA
For potential onshore substation
Area 1 of 3

Rampion 2 WIND FARM



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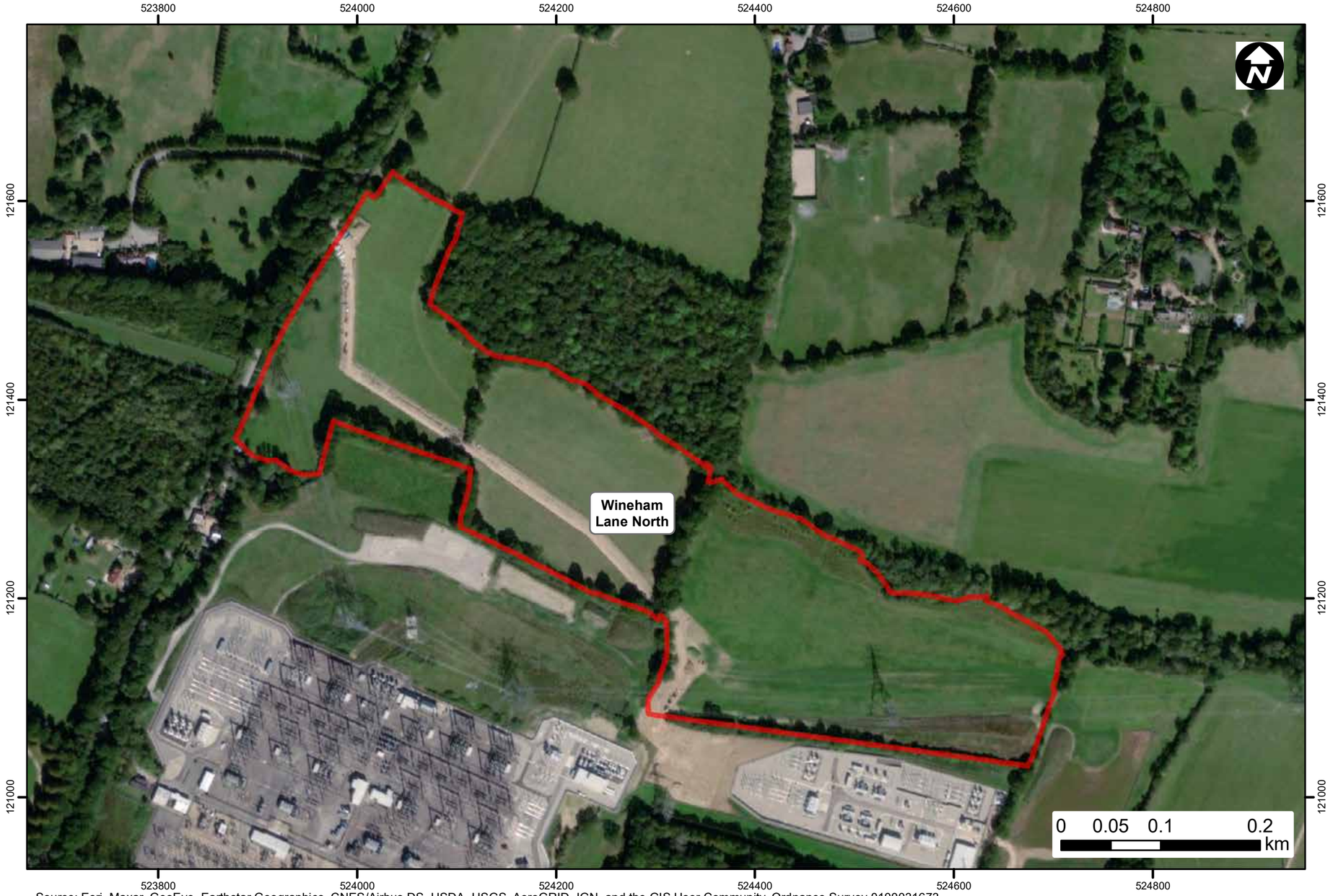
SEARCH AREA
For potential onshore substation
Area 2 of 3

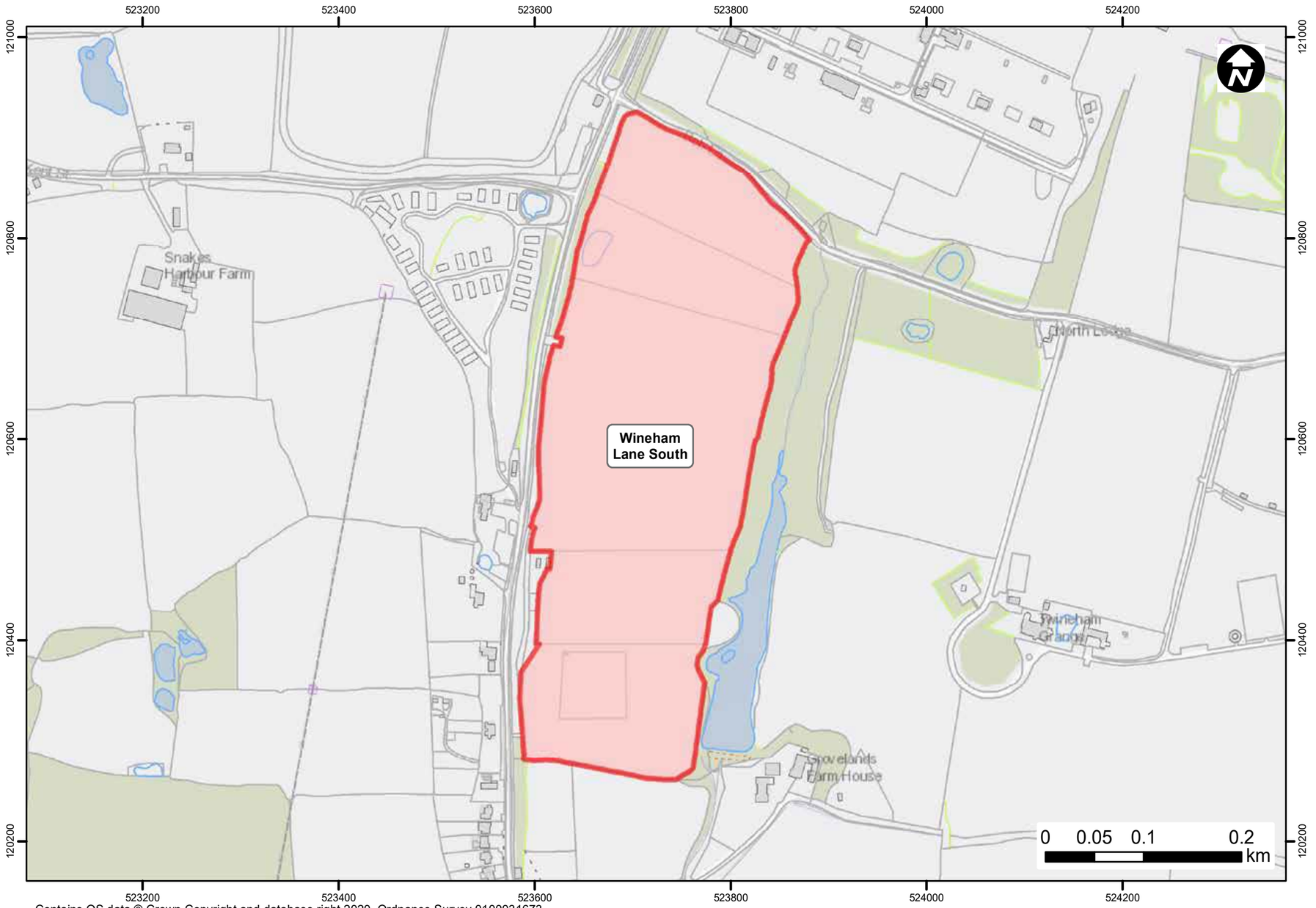
Rampion 2 WIND FARM



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Ordnance Survey 0100031673

SEARCH AREA
For potential onshore substation
Area 2 of 3

Rampion 2 WIND FARM



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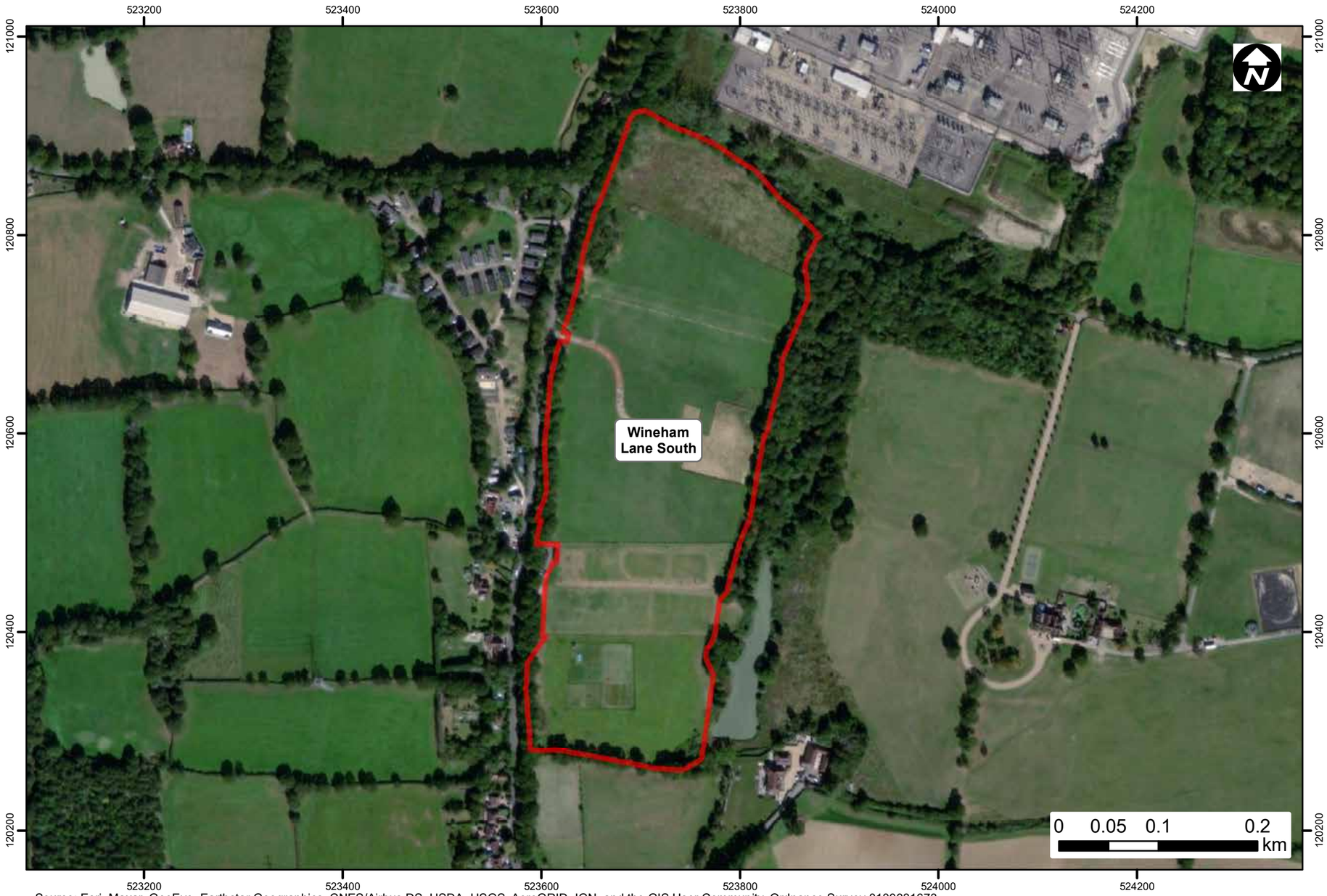
SEARCH AREA
For potential onshore substation
Area 3 of 3

Rampion 2 WIND FARM



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Ordnance Survey 0100031673

SEARCH AREA
For potential onshore substation
Area 3 of 3

Appendix D

Information for Landowners

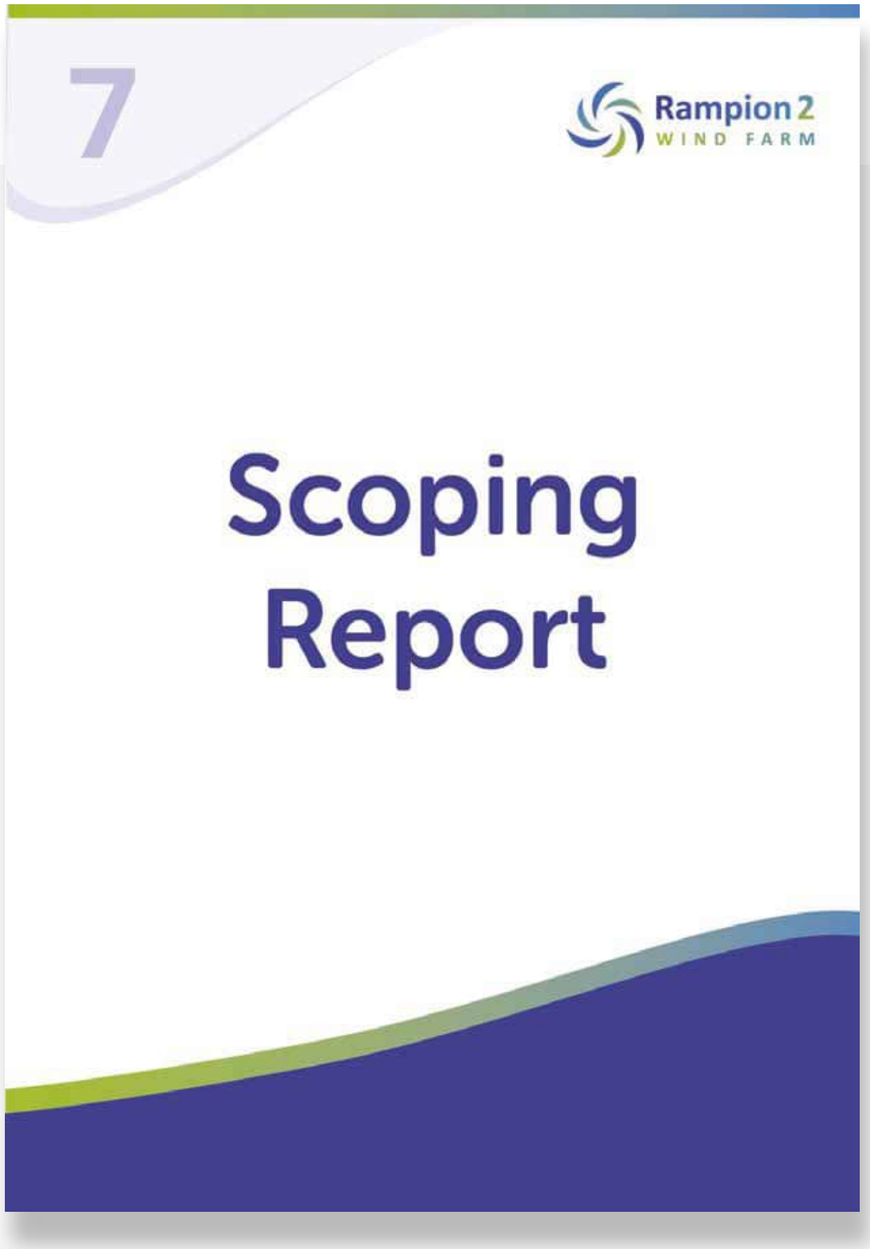
The Rampion 2 Team is aware that other land agents have simply taken the Scoping Boundary for the onshore cable route and written generic letters to all properties in the area, offering their professional services to landowners in any negotiations.

As the Rampion 2 Team refine a cable route within the Scoping Boundary, their land agent, Carter Jonas, will contact the respective landowners individually and directly. No other land agent works for the Rampion 2 Team.

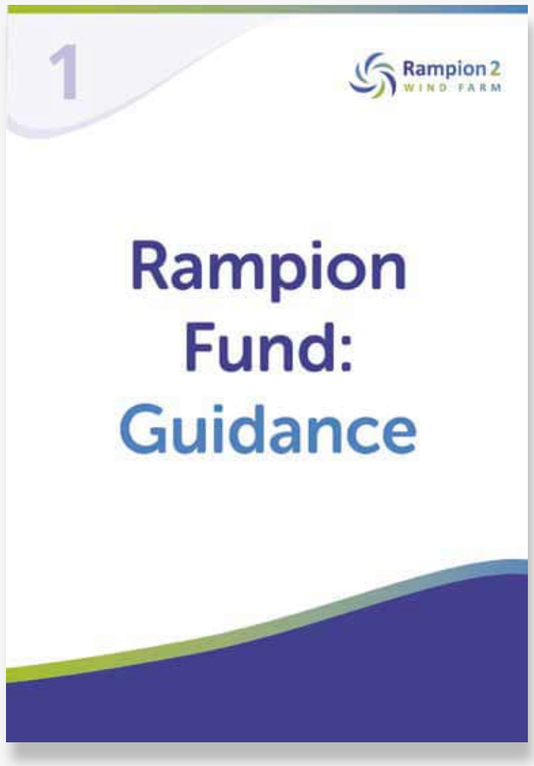
The Rampion Team have also highlighted that they reached agreements with all landowners that they identified along the 27km cable route for the original Rampion project, and did not compulsorily purchase any land or property against the wishes of any owners.

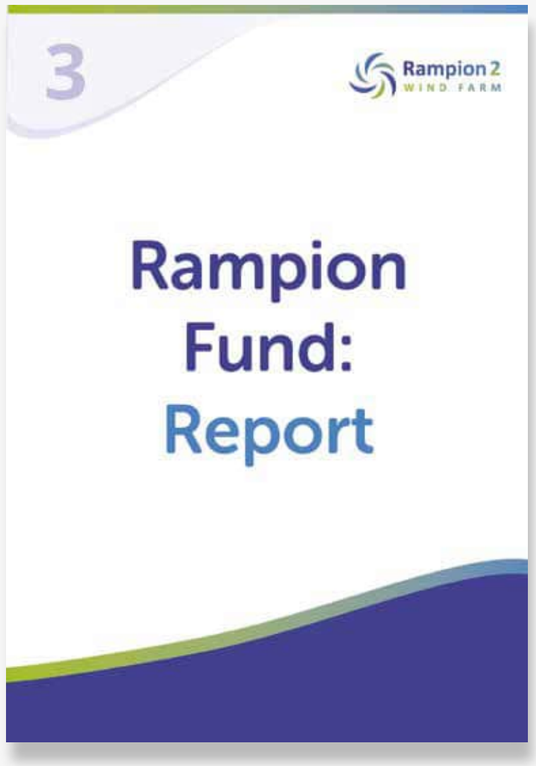
The Team emphasise that they work closely with landowners and the local community to minimise impacts during construction, and wish to highlight that the impact along the cable route would be temporary in nature, during construction only, with the land restored to at least the same standard upon completion of the cable installation.

Go to Appendix E folder to View:



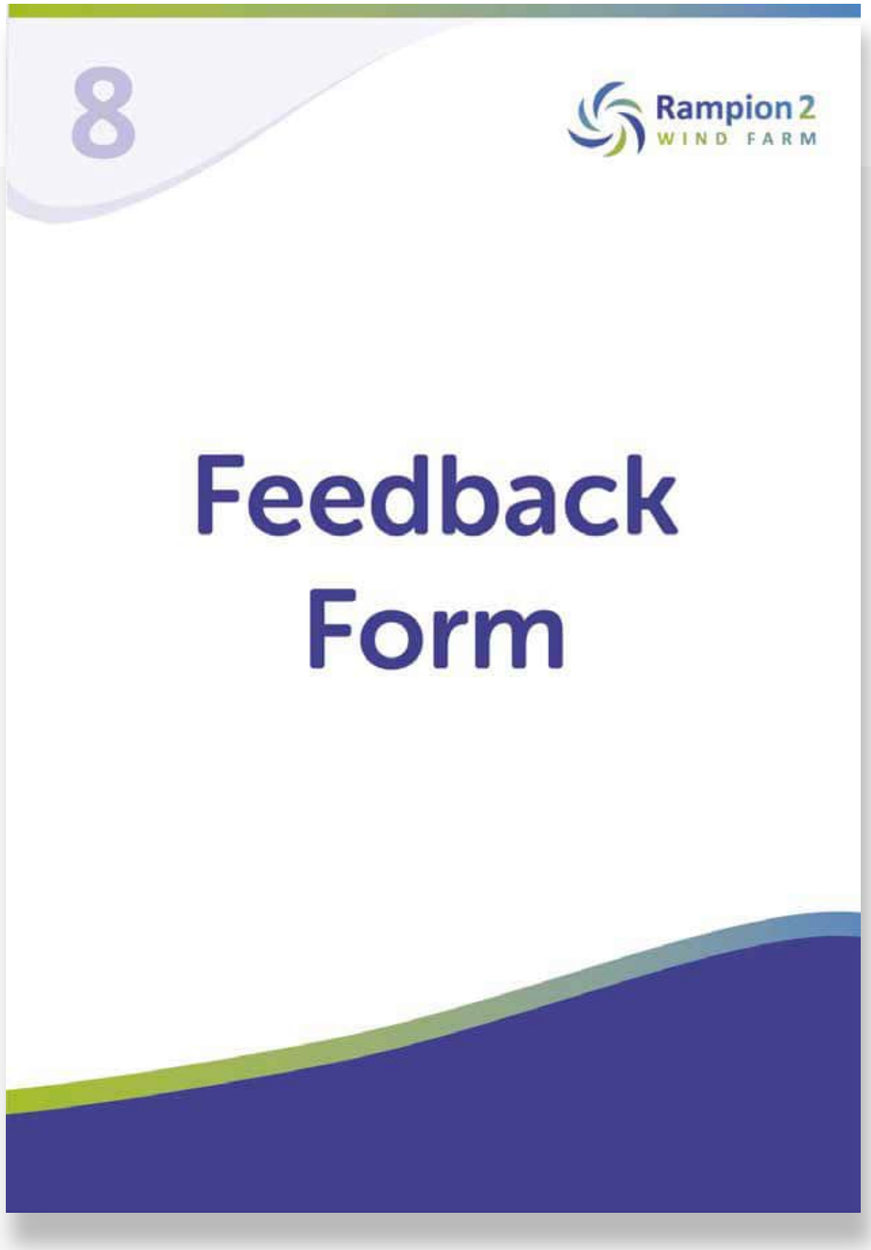
Go to Appendix F folder to View:





We want to hear from you

Click to go to our
online feedback form



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Appendix 12
Rampion 2 One Planet Conflict Plan

524100 524200 524300 524400 524500 524600 524700

121300 121200 121100 121000 120900 120800

Work No. 10

Works No. 19

Works Nos.
13 & 19

Work No. 20

Work No. 20

Works Nos.
17 & 19

Works Nos. 17

CS

Ditch

ETL

Pond

Def

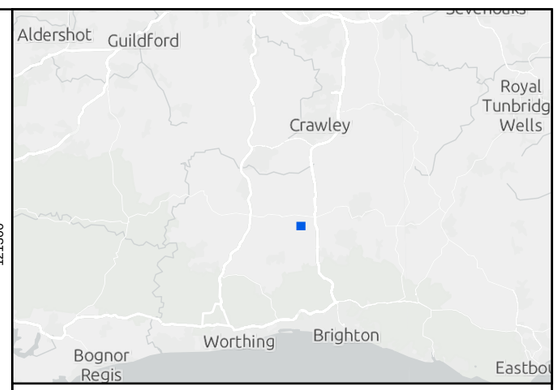
Twineham 400 Kv
Substation

Tank

Track

Twineham
Court
Farm

Ponds



One Planet Application (Ref OPL005-SP-01)

Rampion 2 DCO Order Limits

Rampion 2 DCO Works Areas

Work No. 10 -Temporary construction compound

Work No. 13 - Temporary construction access

Work No. 17 - Environmental mitigation

Work No. 19 - Onshore connection works

Work No. 20 - Bolney substation extension

MAP STATUS

PUBLIC

MAP NOTES / DATA SOURCES:

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PROJECT TITLE

Rampion 2 WIND FARM

DRAWING TITLE

Bolney Substation Connection One Planet Conflict Plan

DRAWING NUMBER: 005106074

PAGE NUMBER: 1

VER	DATE	REMARKS	DRAW	CHEK	APRD
01	23/02/2024	FINAL	LB	VP	UP

0 20 40 60 80 Metres

0 20 40 60 80 Yards

N GRID NORTH

SCALE 1:2,500 PLOT SIZE A3

DATUM OSGB 1936 VERTICAL REF ODN

PRJ British National Grid

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RWE

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Appendix 13
Rampion 2 - Objection One Planet Planning Application (1)

Mid Sussex District Council
Oaklands
Oaklands Road
Haywards Heath
West Sussex
RH16 1SS

FAO: Stuart Malcolm

Rampion 2 Project
Rampion Extension Development Ltd
Windmill Hill Business Park,
Whitehill Way
Swindon
Wiltshire
SN5 6PB

[Note new registered office]

T: 0800 2800886
E: rampion2@rwe.com

21st April 2023

Dear Mr Malcom,

Objection: Proposed One Planet Battery Energy Storage System ("BESS")
(Ref: DM/23/0769)

Conflict with the Rampion 2 Nationally Significant Infrastructure Project ("NSIP")

I write with reference to the recent application by One Planet Developments Limited ("One Planet") allocated with the above Mid Sussex District Council ("MSDC") reference.

I confirm that Rampion Extension Development Limited ("RED") **objects** to the above proposal due to its conflict with the proposed 400 kilovolt cable route and National Grid substation extension required to allow the generation of electricity from the Rampion 2 offshore wind farm NSIP (see conflict plan attached to this letter). The conflict would prevent the delivery of the Rampion 2 project and up to 1,200 megawatts of critically important renewable energy.

The Rampion 2 project is in the public domain and has been the subject of multiple rounds of statutory consultation, to which both the freehold landowner and One Planet have responded. This is a statutory requirement of the NSIP process, which requires the front loading of consultation with prescribed consultees and the local community prior to the finalisation of the application proposals and submission of the application. RED has also held bi-monthly meetings with the freehold landowner and One Planet since July 2022 with the hope of reaching a mutually agreeable arrangement that could facilitate both projects. Having completed the pre-application requirements, RED intends to submit its application for a Development Consent Order ("DCO") pursuant to the Planning Act 2008 this summer 2023. The DCO application will include, where necessary, a request for the authorisation of compulsory acquisition powers to ensure that the Rampion 2 project may be delivered. As an Electricity Act 1989 generation licence holder, RED is a statutory undertaker and therefore its assets, and the land and rights held by it for the purposes of its statutory undertaking, will also benefit from statutory protection from interference which prejudices its undertaking.

If the One Planet proposal is allowed to proceed in its current form, then in the absence of a satisfactory agreement between RED, the freehold landowner and One Planet and, as necessary, with National Grid and UK Power Networks, which safeguards the delivery

...

of Rampion 2, RED will have little option but to seek the necessary compulsory acquisition powers in the DCO to facilitate the delivery of Rampion 2. Given the current conflict between the One Planet and Rampion 2 proposals, such powers would need to include the ability to prevent the delivery of the One Planet proposal on land required for Rampion 2 and the ability to remove and/or demolish any parts of the One Planet project that have been implemented prior to the commencement of Rampion 2, where there is conflict with the NSIP.

Further to communicating Rampion 2 plans at meetings as mentioned at the start of this letter, the One Planet proposed scheme has not taken into consideration the Rampion 2 proposed onshore infrastructure. RED was not made aware that the application had been submitted and therefore we confirmed in our most recent meeting with One Planet (19th April 2023) that we intended to object to their application.

In the absence of an agreement that facilitates the successful delivery of the Rampion 2 project, RED strongly requests that the current proposal is **refused** by MSDC. This is on the basis that, whilst Government expects BESS to play an "important role"[1], unlike Rampion 2 and other offshore wind farms, it is not classified as:

- "Nationally Significant" under the Planning Act 2008 or in the associated adopted National Policy Statements;
- Required on an "urgent" basis, as set out for offshore wind farms under National Policy Statements[2]; or
- "Critical National Infrastructure", as set out for offshore wind farms (and their associated onshore and offshore infrastructure) in the draft National Policy Statement EN-1[3].

Neither has One Planet applied for or been granted a direction under Section 35 of the Planning Act 2008 to determine that the One Planet project is a "project of national significance".

Furthermore, RED is not aware of One Planet having a confirmed connection date with National Grid Electricity Transmission (NGET) to facilitate their Distribution Network Connection.

In contrast, RED has held a connection agreement with NGET since Quarter 1 2020 for a confirmed connection capacity up to 1,200 megawatts.

RED's position is therefore that Government clearly intends for Rampion 2 to be substantially elevated in importance, urgency and criticality in the planning system relative to projects such as the One Planet proposal and that this should be a substantial and overriding material consideration where conflict occurs. The planning balance falls firmly in favour of protecting the ability to deliver Rampion 2 and refusing the One Planet application until such time as an agreeable arrangement, through an alternative One Planet proposal, is reached.

The basis of the above is set out in more detail below.

Interaction between the projects and timings

The enclosed conflict plan shows the relationship between:

[1] National Policy Statement EN-1 paragraph 3.3.12

[2] National Policy Statement EN-1 paragraphs 3.3.1, 3.3.15 and 3.4.1 and Consultation Draft National Policy Statement paragraph 3.3.60

[3] Consultation Draft National Policy Statement EN-1 paragraph 3.3.59

- Rampion 2's proposed cable corridor (which was consulted on a statutory basis in summer 2021) (yellow and green/yellow diagonal-hatched);
- Rampion 2's proposed National Grid Bolney substation extension which will be consulted on during May 2023 (orange cross-hatch); and
- One Planet's Application Boundary transposed from submitted pdf application plans (black outline).

Note that Rampion 2 has already substantially reduced the potential for conflict with One Planet by removing an area of construction compound previously indicated in its summer 2021 consultation Works Plans (green, to the east of the cable corridor works).

The conflict plan shows that:

- One Planet's main BESS area conflicts with Rampion 2's proposed cable corridor (at the western end of the proposed One Planet scheme); and
- One Planet's electrical connection, which we understand has been determined by UK Power Networks working with One Planet, conflicts with Rampion 2's proposed National Grid Bolney substation extension.

Failure to deliver either the substation extension or 400 kilovolt connection would physically prevent Rampion 2 transmitting electricity to the national electricity transmission network operated by National Grid.

Rampion 2 intends to submit a DCO application this summer which, on present typical Planning Inspectorate and Secretary of State timescales for NSIPS, would result in DCO approval circa end 2024. One Planet will be free to make representations to the Rampion 2 DCO Examination, which would likely commence late 2023.

Note that the Rampion 2 cable corridor shown on the conflict plan is typically 100m wide to allow flexibility to determine a final cable arrangement within. Rampion 2 ultimately requires a 30m construction corridor, becoming a 20m permanent easement, within that wider corridor. Rampion 2 remains in a position to agree a 30m/20m route as above at pre-application in this vicinity, to minimise the effect on the One Planet scheme.

Rampion 2 will therefore continue to proactively engage with One Planet to seek to secure agreement to a mutually acceptable arrangement.

National Policy Statements and policy position

NPS EN-1 is clear that it should be a material consideration in decision making on applications that fall under the Town and Country Planning Act 1990.

In respect of renewable energy generation, therefore including offshore wind, NPS EN-1 states:

"new projects need to continue to come forward urgently…" (paragraph 3.4.1)

The same urgent sentiment is repeated for all forms of nationally significant electricity NSIP in paragraphs 3.3.1 and 3.3.15 of NPS EN-1.

In respect of BESS among "other" electrical technologies, NPS EN-1 states:

"Although Government believes these technologies will play important roles in a low carbon electricity system, the development and deployment of these technologies at the necessary scale has yet to be achieved." (paragraph 3.3.12)

Energy National Policy Statements are currently the subject of review and the latest consultation on the draft NPS continues to 25th May 2023. Key aspects of this include Government seeking views on clarifying that offshore wind is now a national critical priority.

In respect of offshore wind, the latest NPS consultation draft EN-1 states:

"Government has concluded that there is a critical national priority (CNP) for the provision of nationally significant new offshore wind infrastructure (and supporting onshore and offshore network infrastructure)." (paragraph 3.3.59)

and following which paragraph 3.3.60 identifies the "*urgent need*" for CNP infrastructure.

In respect of BESS, the latest NPS consultation draft EN-1 states:

"Storage has a key role to play in achieving net zero and providing flexibility to the energy system" (paragraph 3.3.25)

Taken together, it is clear that Government intends for offshore wind NSIPs to be considered urgent and critical to meeting the nation's needs. Whilst the importance of BESS is acknowledged, the One Planet proposal is neither nationally significant, urgent or critical. On this basis substantial weight should be given to preventing conflict with Rampion 2's proposals, to ensure that the benefits of substantial renewable generation, including construction and operational jobs and commercial opportunities are realised.

Next steps

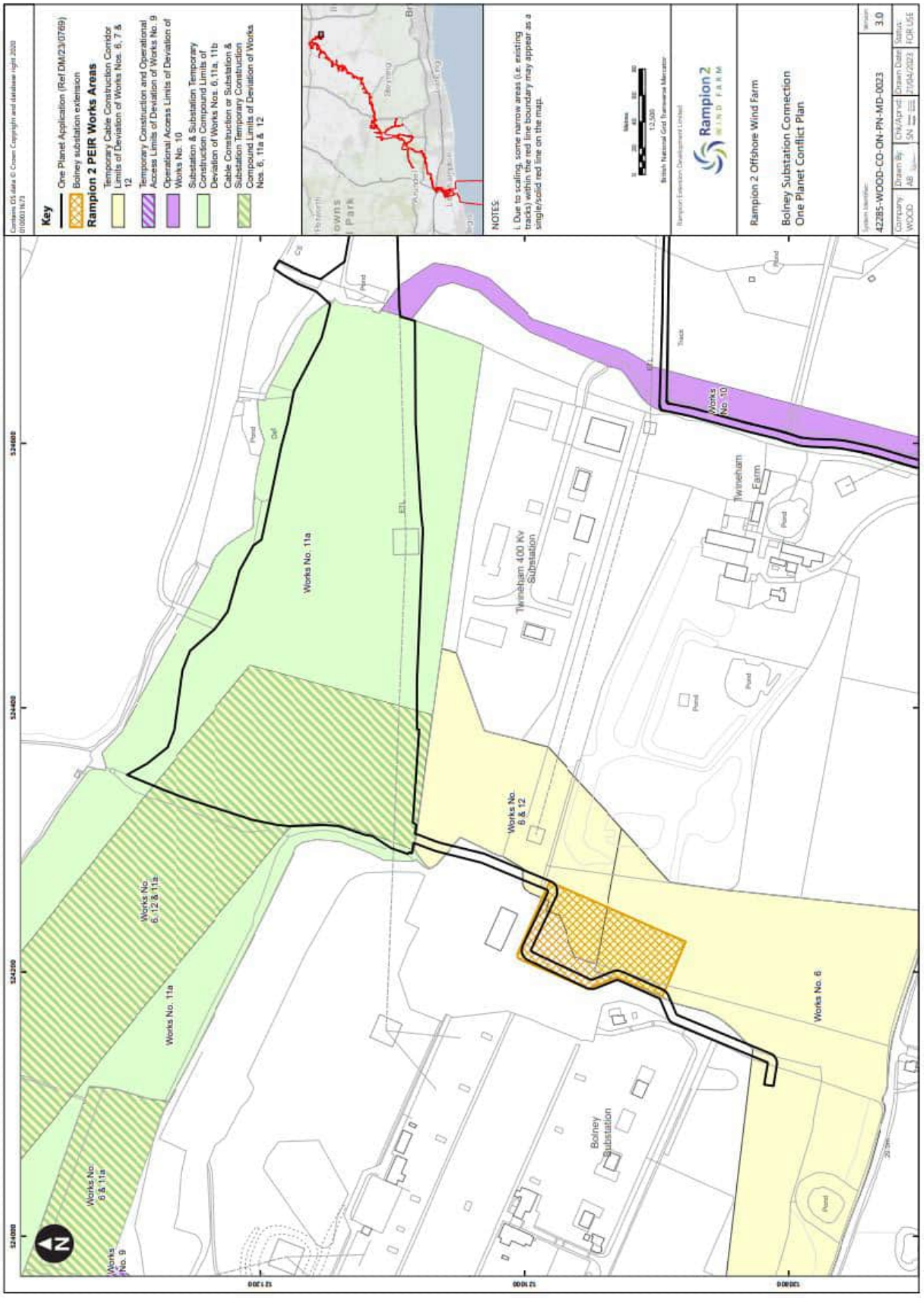
As set out above, Rampion 2 will continue to engage with One Planet to seek to agree a mutually acceptable arrangement. Rampion 2 would be happy to discuss matters relating to the One Planet conflict with Mid Sussex District Council at a future scheduled meeting.

Yours sincerely,

Vaughan Weighill
Project Manager Rampion 2, RWE

Enc: Conflict plan

Conflict Plan



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Appendix 14
Rampion 2 Objection One Planet Planning Application (2)

Mid Sussex District Council
Oaklands
Oaklands Road
Haywards Heath
West Sussex
RH16 1SS

Rampion 2 Project
Rampion Extension Development Ltd
Windmill Hill Business Park,
Whitehill Way
Swindon
Wiltshire
SN5 6PB

T: 0800 2800886
E: rampion2@rwe.com

26 October 2023

Dear Mr Malcolm,

Objection: Proposed One Planet Battery Energy Storage System ("BESS")
(Ref: DM/23/0769)

Conflict with the Rampion 2 Nationally Significant Infrastructure Project ("NSIP")

I write with reference to the recent consultation on revised details provided by One Planet Developments Limited ("One Planet") allocated with the above Mid Sussex District Council ("MSDC") reference.

I confirm that Rampion Extension Development Limited ("RED") objects to the above proposal due to its conflict with the proposed 400 kilovolt cable route and National Grid substation extension required to allow the generation of electricity from the Rampion 2 offshore wind farm NSIP. We maintain the same objection as set out in our response to the initial planning application dated April 2023. The current One Planet plans conflict with the delivery of the Rampion 2 project, and if taken forward could compel Rampion 2 to utilise compulsory purchase powers.

Ultimately, we recommend that the design of the One Planet project aligns with a forthcoming National Grid masterplan for facilitating low carbon connections at the Bolney Substation. Based on our own existing assessments of EIA sensitivities, utilities mapping and construction constraints, Rampion 2 has proposed a suggested location for siting of the Rampion 2 switchgear. This outline location and footprint for the Rampion 2 switchgear is included in the draft Development Consent Order application that is on the Planning Inspectorate's website: EN010117-000419-Rampion 2 Exam Library.pdf (planninginspectorate.gov.uk) . The currently illustrated location of the One Planet substation would conflict with the Rampion 2 connection. An extract of the Rampion 2 works plans is attached for ease of comparison with the One Planet proposals. We seek a design that could ensure coexistence of the two projects.

We also note that the cable route proposals for One Planet need to consider the crossing of existing utility crossings, a utility pinchpoint and run through surface water flood risk areas (identified in the Rampion 2 Environmental Statement). The current design for One Planet scheme appears to have the

sole objective to maximise the density of containers on the land available for the scheme. We query if this is a realisable scheme - does the density of units present acceptable fire risk and is there sufficient water storage and access in this design? A better thought through design and one that avoids the conflicts with Rampion 2 connection is needed. The One Planet scheme design needs to tie in with the National Grid connection masterplan.

The draft Development Consent Order for the Rampion 2 project was recently accepted for examination by the Planning Inspectorate. This follows multiple rounds of statutory consultation, to which both the freehold landowner and One Planet have responded. RED has also held monthly meetings with the freehold landowner and One Planet since July 2022 with the hope of reaching a mutually agreeable arrangement that could facilitate both projects.

Having completed the pre-application requirements, the DCO application includes, where necessary, a request for the authorisation of compulsory acquisition powers to ensure that the Rampion 2 project may be delivered. As an Electricity Act 1989 generation licence holder, RED is a statutory undertaker and therefore its assets, and the land and rights held by it for the purposes of its statutory undertaking, will also benefit from statutory protection from interference which prejudices its undertaking.

If the One Planet proposal is allowed to proceed in its current form, then in the absence of a satisfactory agreement between RED, the freehold landowner and One Planet and, as necessary, with National Grid and UK Power Networks, which safeguards the delivery of Rampion 2, RED will have little option but to seek the necessary compulsory acquisition powers in the DCO to facilitate the delivery of Rampion 2. Given the current conflict between the One Planet and Rampion 2 proposals, such powers would need to include the ability to prevent the delivery of the One Planet proposal on land required for Rampion 2 and the ability to remove and/or demolish any parts of the One Planet project that have been implemented prior to the commencement of Rampion 2, where there is conflict with the NSIP.

Further to communicating Rampion 2 plans at meetings as mentioned at the start of this letter, the One Planet proposed scheme has not taken into consideration the Rampion 2 proposed onshore infrastructure. In particular the issue for us is that the One Planet substation is located to the west of the One Planet site where it is most likely to conflict with the Rampion 2 onshore cable route and existing infrastructure.
In the absence of an agreement that facilitates the successful delivery of the Rampion 2 project, RED strongly requests that the current proposal is refused by MSDC. Whilst Government expects BESS to play an "important role"[1], unlike Rampion 2 and other offshore wind farms, it is not classified as:

- "Nationally Significant" under the Planning Act 2008 or in the associated adopted National Policy Statements;
- Required on an "urgent" basis, as set out for offshore wind farms under National Policy Statements[2]; or
- "Critical National Infrastructure", as set out for offshore wind farms (and their associated onshore and offshore infrastructure) in the draft National Policy Statement EN-1[3].

<u>Interaction between the projects and timings</u>

- Rampion 2 has already substantially reduced the potential for conflict with One Planet by removing an area of construction compound previously indicated in its summer 2021 consultation Works Plans.

The conflicts are that:

- One Planet's main BESS area conflicts with Rampion 2's proposed cable corridor (at the western end of the proposed One Planet scheme); and
- One Planet's electrical connection, which we understand has been determined by UK Power Networks working with One Planet, conflicts with Rampion 2's proposed National Grid Bolney substation extension.

Failure to deliver either the substation extension or 400 kilovolt connection would physically prevent Rampion 2 transmitting electricity to the national electricity transmission network operated by National Grid.

Rampion 2 has submitted a DCO application which, on present typical Planning Inspectorate and Secretary of State timescales for NSIPS, would result in DCO approval circa end 2024. One Planet is free to make representations to the Rampion 2 DCO Examination, which is currently open for receiving notice of Relevant Representations.

Rampion 2 has shared buried services information with One Planet and will continue to proactively engage with One Planet to seek to secure agreement to a mutually acceptable arrangement.

<u>Next steps</u>

As set out above, Rampion 2 will continue to engage with One Planet to seek to agree a mutually acceptable arrangement. Rampion 2 is also urging National Grid to outline its connection masterplan as soon as possible. Rampion 2 would be happy to discuss matters relating to the One Planet conflict with Mid Sussex District Council at a future scheduled meeting should this be requested.

Yours sincerely

Karen Algate
Consents Manager Rampion 2, RWE

Enc:
Extract of the Rampion 2 works plans

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Appendix 15
Promotion of Rampion 2 Consultations in and around Cowfold 2021-2022

Promoting Rampion 2 Consultations in Cowfold 2021 -22

18th January 2023

Since early 2021, Rampion 2 has developed and delivered three consultations on its project proposals, a Non-Statutory Consultation and two Statutory Consultations in accordance with the Planning Act 2008.

Section 47 of the Act requires that Rampion 2 carry out Statutory consultations in accordance with the provisions set out in a Statement of Community Consultation (SoCC). The SoCC sets out how, when, about what and with whom we intend to consult and what promotional measures will be used to raise awareness of the consultation. Two versions of the SoCC were consulted (one for each Statutory Consultation) with the relevant Local Planning authorities, in this case with Horsham District Council and West Sussex County Council, to ensure it meets those local authorities' requirements.

The original and updated SoCC were each published during the respective Statutory Consultations and are public documents available on our website.

Section 48 of the Act requires that a proposed application must be publicised as prescribed, with regulations setting out the details of the applicant and application that must be given. In addition, section 42 of the 2008 Act requires Rampion 2 to consult specified categories of people about the proposed application. These include prescribed bodies (which are set out in regulations), local authorities (with a formula for identifying the relevant authorities) and each person who is within one or more of the categories set out in section 44.

This briefing note summarises how we have adequately promoted our consultations in accordance with the proposals we set out in the SoCC, which details our overall approach to publicising consultation, developed with the support of directly affected Local Planning Authorities. It breaks down our activity into three areas, Non-Statutory Consultation, our first project wide Statutory Consultation and our most recent Onshore Statutory Consultation.

As an integral part of the Development Consent Order (DCO) application, we are also required to submit a comprehensive Consultation Report, describing in detail all of the consultation activity undertaken and how these were promoted in line with the agreed requirements in the SoCC. The Consultation Report will also document the consultation feedback we received and our response to that feedback, including any changes made to our proposals as a result. As part of the application process all relevant Local Planning Authorities will be consulted by the Planning Inspectorate to confirm the consultations were carried out in line with the SoCCs.

Given recent correspondence relating to concerns in respect of how the consultations were publicised, particular emphasis has been given to s47 of the Act and the promotional activity we delivered in line with the agreed SoCCs.

Rampion 2 have held three consultations to date:-

1. **Non-statutory consultation:** 14th Jan – 11th Feb 2021. A voluntary, non-statutory consultation held over four weeks to raise awareness of the project and seek feedback on three onshore substation site search areas, including one at Oakendene (then known as Bolney Road / Kent Street);
2. **First statutory public consultation:** 14th July – 16th Sept 2021. A project-wide consultation held over 9 weeks to formally consult statutory bodies and the wider community, which also sought feedback on two remaining onshore substation search areas including Oakendene (then known as Bolney Road / Kent Street); and
3. **Second statutory public consultation:** 18th Oct – 29th Nov 2022. A targeted onshore consultation held over 6 weeks, to formally consult statutory bodies and the wider community on potential changes to our onshore cable route, only.

Rampion 2 use a range of methods to reach those who live, work and visit the area in the vicinity of our draft proposals. This document highlights the key methods that were used to promote each of the consultations.

1. Non-statutory consultation, 14th Jan – 11th Feb 2021

The methods which we used to promote this consultation in the Cowfold area include the following:-

- **Leaflets** were hand delivered to a local area, which included all homes and businesses within a 300m radius from the boundary of the three substation search areas. This included the businesses at Oakendene Industrial Estate;
- **Posters** were provided to Cowfold Parish Council to put up on their locked notice boards and artwork was emailed;
- **News coverage** promoted the consultation with major pieces on ITV Meridian, BBC South TV, BBC Sussex Radio and More Radio, with newspaper coverage in the Mid Sussex Times, West Sussex Gazette, West Sussex County Times and The Argus;
- **A Social Media awareness campaign** (Facebook and Instagram) was launched, which included Cowfold and Lower Beeding as target geographical locations; and
- **Emails** announcing the consultation were sent to key stakeholders including MPs, local authorities and parish councils, including Cowfold Parish Council, Horsham District and West Sussex County Councils. The email included a poster image to promote the consultation and encouraged the sharing of the email and/or image within the organisation and through their networks such as community newsletters, emails, websites, Facebook, Instagram or Twitter pages.

The following meetings and events were held during the consultation period:-

- **6 x Project Liaison Group meetings** were held, which included the Onshore Community PLG with Cowfold Parish Council representation at the October 2020 meeting, although they gave their

apologies for the February 2021 meeting. All invitations, presentation and minutes were emailed to Cowfold PC;

- **Stakeholder meetings** were held with MPs and local authorities in advance of the consultation in November and December 2020, including meetings with Andrew Griffith MP, Mims Davies MP, Horsham District Council and West Sussex County Council.

2. First statutory public consultation, 14th July – 16th Sept 2021

The methods which we used to promote this consultation in the Cowfold area included the following:-

- **Leaflets** were posted to promote the consultation, which is standard practice. We sent a leaflet via Royal Mail to all homes and businesses within a 3km radius of the boundaries of the two substation search areas, which picked up all properties in Cowfold with a postcode, amounting to over 800 addresses. The leaflet was posted on 12th July and would have arrived on doormats three days later;
- **Posters** were provided to Cowfold Parish Council to put on their locked notice boards and artwork provided by email;
- **Section 48 Notices** were erected on footpath signposts at both Kent Street and Wineham Lane;
- **Letters** were issued to affected parties including all landowners on land covered by our proposals plus an appropriate buffer around the two substation sites. In some instances, members of the local community would have received both the above leaflet and s42 letter;
- **News coverage** on ITV Meridian, BBC South TV, BBC Sussex Radio and More Radio with newspaper coverage in the Mid Sussex Times, West Sussex Gazette, West Sussex County Times and The Argus. Additional reminder stories were published in the press which followed towards the end of the consultation;
- **Statutory Public Notices** were placed on full pages in the Mid Sussex Times, West Sussex Gazette, West Sussex County Times and The Argus;
- **Online newspaper adverts** were published;
- **Adverts on the back and side of buses** covering country routes to Mid Sussex from West Sussex depots;
- **Social media awareness campaign** (Facebook and Instagram) including Cowfold and Lower Beeding as target geographical locations;
- **Section 48 Notices** were erected on footpath signposts at both Kent Street and Wineham Lane; and
- **Emails** promoting the consultation and the associated materials and events were sent to:-
  - Section 42 statutory consultees including landowners;
  - Local authorities that our proposals pass through and neighbouring authorities;
  - Locally elected representatives, including those from Horsham and Mid Sussex Councils;
  - Parish councils that our proposals pass through and neighbouring parishes. This included emails to the Chair and Clerk of Cowfold Parish Council on 14th July and 6th September;

- MPs, including Andrew Griffith MP (Arundel & South Downs) and Mims Davies MP (Mid Sussex);
- 'Hard to reach' groups, which in Cowfold included churches, the village hall and Allmond Community Centre;
- Other stakeholders who have registered an interest to be kept informed via our website
- Rampion 2 Expert Technical Groups; and
- Rampion 2 Project Liaison Groups (including the Onshore Community PLG with Cowfold Parish Council represented).

The following meetings and events were held during the consultation period:-

- **6 x Rampion 2 Project Liaison Group meetings** were held, which includes the Onshore Community PLG. Cowfold PC did not attend or send apologies but were emailed all invitations, presentation and minutes. The Clerk confirmed the Chair had received the invitation;
- **2 x Virtual Public Forums** on 27th July and 6th September;
- **2 x Virtual Parish Council Forums** on 28th July and 23rd August; and
- **Local Authority and Parish Council online meetings** including with West Sussex County Council and Horsham District Council.

Onshore substation decision announcement, 14th July 2022

Following our consideration of all responses to the statutory consultation and decision to locate the onshore substation at the Oakendene site, we announced the location with a press release, issued to local newspapers on 14th July 2022. A day in advance of this on 13th July, the Rampion 2 Team sent an email to announce this decision (accompanied with a press release) to local MPs including Andrew Griffith and Mims Davies, local authorities including Horsham, Mid Sussex & West Sussex and parish councils including Cowfold, Shermanbury, Bolney and Twineham.

The substation announcement was subsequently included in the Mid Sussex Times and West Sussex County Times, in addition to being in their online version, Sussexworld. BBC Radio Sussex and More Radio included the announcement in their news coverage.

Mims Davies MP also included the substation decision on her website and in her column in the Mid Sussex Times in August 2022.

3. Second statutory public consultation, 18th Oct – 29th Nov 2022

Note that this consultation was specifically focussed on potential changes to parts of the onshore cable route only, with the onshore substation decision having already been announced. This was specifically targeted at those who live, work or visit the area local to the cable route and potential changes.

The methods which we used to promote this consultation in the Cowfold area included the following:-

- **Leaflets** presented the relevant information on how the public could take part in the consultation in a clear and concise manner. They were posted to promote the consultation, which is standard practice. We sent a leaflet via Royal Mail to all homes and businesses within 1km of the proposals, which picked up the majority of properties in Cowfold with a postcode. The leaflet was posted on 14th October and would have arrived on doormats three days later;
- **Posters** were sent by Royal Mail addressed to the Cowfold Parish Council Clerk (address published on Horsham DC website) and also artwork requesting them to put on their locked notice boards;
- **Section 48 Notices** were erected on footpath signposts at both Kent Street and Wineham Lane;
- **Section 42 letters** were issued to affected parties including all landowners on land covered by our proposals. In some instances, members of the local community would have received both the above leaflet and s42 letter;
- **News coverage** on ITV Meridian, BBC South TV, BBC Sussex Radio and More Radio with newspaper coverage in the Mid Sussex Times, West Sussex Gazette, West Sussex County Times and The Argus. Additional reminder stories were published in the press towards the end of the consultation;
- **Statutory Public Notices** placed in the Mid Sussex Times, West Sussex Gazette and West Sussex County Times;
- **Social media awareness campaign** (Facebook and Instagram), including Cowfold and Lower Beeding as target geographical locations; and
- **Section 48 Notices** were erected on footpath signposts at both Kent Street and Wineham Lane.
- **Emails** were sent to:-
  - Section 42 statutory consultees including landowners;
  - Local authorities that our proposals pass through, plus neighbouring authorities;
  - Locally elected representatives, including those from Horsham and Mid Sussex Councils;
  - Parish councils that our proposals pass through and neighbouring parishes. This included emails to the Chair and Clerk of Cowfold Parish Council on 17th October and 17th November
  - MPs, including Andrew Griffith MP (Arundel & South Downs) and Mims Davies MP (Mid Sussex);
  - 'Hard to reach' groups, which in Cowfold included churches, the village hall and Allmond Community Centre;
  - Other stakeholders who have registered an interest to be kept informed via our website
  - Rampion 2 Expert Technical Groups; and
  - Rampion 2 Project Liaison Groups (including the Onshore Community PLG with Cowfold Parish Council represented).

The following meetings and events were held during the consultation period:-

- **Consultation Events (x4)** were held along the cable route on 1st, 2nd, 11th and 12th November, with almost 600 people attending the events, including Cowfold Parish Council representation.
- **A Cowfold Public Meeting** hosted by the parish was held on 23rd November. It was promoted on the Parish Council website and via posters in the local area, which attracted around 50 attendees. Rampion Project Team members presented to the meeting and answered a wide range of questions.
- **5 x Rampion 2 Project Liaison Group meetings** were held, which includes the Onshore Community PLG with Cowfold Parish Council representation and all invitations, presentation and minutes shared with Cowfold PC.
- **Parish Councils Virtual online forum on 3rd November** which included Cowfold Parish Council representation.

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Appendix 16
Letter to Mr & Mrs Griffiths 20.09.23

Carter Jonas

3 Royal Court
Kings Worthy
Winchester
SO23 7TW

Your ref:
Our ref: WSX288796

Mr & Mrs Griffiths (care of Robert Crawford-Clarke)
Merrion Farm
Bines Green
Partridge Green
Horsham
RH13 8EH

20 September 2023

Dear Mr & Mrs Griffiths,

CC: Robert Crawford-Clarke

RESPONSE TO QUERIES RAISED THROUGH AND POST CONSULTATION (28 NOVEMBER 2022 – 16 JUNE 2023)

I am writing to set out a comprehensive response to all the queries raised in the following correspondence:

- Consultation response dated 28th November 2022 – Mr & Mrs Griffiths
- Merrion Farm personal Consultation response dated 26th November 2022
- 26th April 2023 – Email sent by Robert Crawford-Clarke summarising main concerns
- 26th June 2303 – Email sent by Robert Crawford-Clarke

1 - Environmental Surveys

Extract from Consultation response dated 28th November 2022

> On various occasions, both we and our client have been promised the results of the various environmental surveys your consultants have undertaken on his land, but to date these have not been received. We assume your current proposals on the cable route take into account these results, and wish to place on record that it is unreasonable to expect our client to engage in this consultation process without this information.

As you are aware the cable route is over 40km long and survey data is largely digitised for the whole stretch. The Preliminary Environmental Information Report (PEIR) and supplementary report set out information on surveys carried out and findings, for example, relating to habitats and protected species along the cable route. This information has now been taken from raw survey data, drawn together and analysed by our EIA consultants. and the most up to date results presented in the Environmental Statement (ES) in accordance with the relevant guidance and legislation from organisations such as Natural England. This ES has been submitted with the DCO application material which will soon be available to view at https://www.gov.uk/government/organisations/planning-inspectorate.

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Classification L2 - Business Data

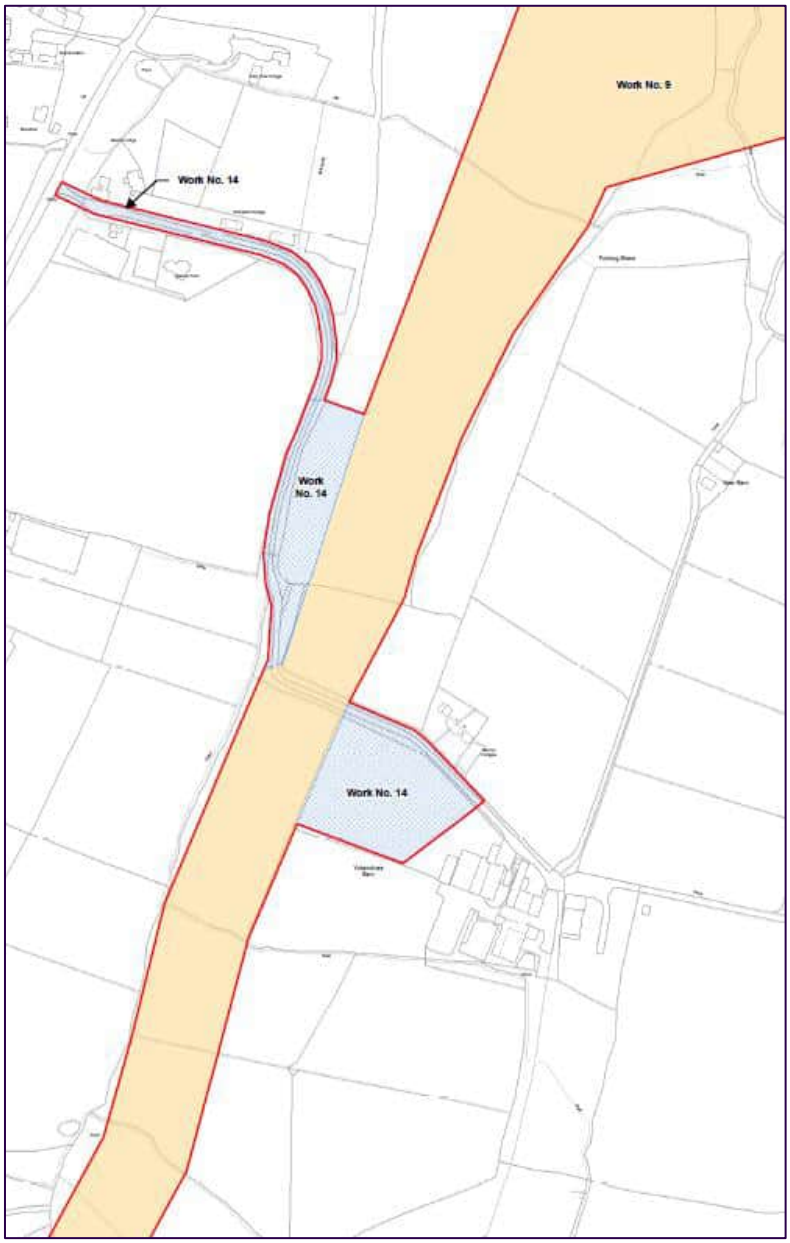
Rampion 2 has been advised by its environmental consultant that forwarding the raw data is unlikely to be informative due to its abstract form. We would be happy to provide information from the ES relevant to specific survey areas of interest the Griffith's have.

2 – DCO Boundary

Extract from Consultation response dated 28th November 2022

> It is very difficult to comment meaningfully on the latest proposals when the red line on the plan is drawn to cover such a wide area. This leaves the actual proposed cable route open to very broad interpretation. If all the data you have gathered to date has been properly analysed by you, then we see no reason why a more accurate indication of the proposed route options cannot be shown on the map. Again, it is unreasonable to expect our client to comment meaningfully on your latest proposals without this information.

Please see below plan of the proposed cable route area shown coloured brown and accesses coloured blue to be included within the DCO boundary. The DCO boundary is wider than the construction corridor and permanent cable easement which are anticipated to be in the region of 40m wide and 20m wide respectively. However further surveys and ground investigations will be required prior to construction to determine the exact route to be taken within the corridor. Land use constraints can be factored into this detailed routeing, and we would welcome further discussion about this in the context of the holiday uses.



Key

Development Consent Order Limits

Works Area Descriptions

- Work No. 9 - Cable installation works (including construction and operational access)
- Work No. 11 - Temporary soil storage
- Work No. 13 - Temporary construction access
- Work No. 14 - Construction and operational access
- Work No. 15 - Operational access

3 - Disturbance Compensation - Impact on Farming Business

Extract from email sent by Robert Crawford-Clarke summarising main concerns dated 26th April 2023

'Due to the temporary loss of land for fodder production, they will have to buy in significant quantities, particularly of maize. How is this to be sourced? When they do buy in maize currently, they get it from the Wiston Estate at Buncton which will also be affected by the scheme and thus may well not have sufficient supplies to sell. It's all very well stating that my client can claim for additional feed costs, but the feed still needs to be sourced and this may not be possible. If that is the case, my client may have no option but to reduce cow numbers which will have significant and long term financial impacts.'

Crop loss and disturbance will be paid where reasonable, substantiated and shown to be caused as a direct consequence of the temporary use of the land, the works, and/or the acquisition of the cable easement in accordance with the relevant legislation.

Although it is the landowner's responsibility to mitigate their losses, where additional feed is sourced, any subsequent financial impact and its cause should be evidenced, as per the above. It is appreciated that supply and demand will always fluctuate, with compensation being paid benchmarked against the market price at that point in time.

4 - Disturbance Compensation - Holiday and Camping income

Extract from email sent by Robert Crawford-Clarke summarising main concerns dated 26th April 2023

'The absence of any detail in the terms on disturbance and compensation provisions is a particular concern. Given that you have retained your proposed route so close to the holiday let and camping enterprises, the long term impact on these could well be significant. My clients expect not only loss of business during construction, but also for several years afterwards as existing client base and goodwill is eroded, meaning they will pretty much have to 'start again' after construction is complete. How will these post construction losses, which will not be easy to demonstrate, be quantified?'

Compensation will be paid in accordance with the provisions of the Compulsory Purchase Compensation Code. In principle, claims for severance and injurious affection may arise but it is not possible to comment on the detail or quantum of such claims now because that will depend on the circumstances that give rise to a valid claim at the time, and the basis of the claim presented by your clients, including taking into account the net impact after mitigation/accommodation works are implemented by the project. Claimants are also under a duty to mitigate their own losses. Where valid claims arise, interim claims will be considered and as appropriate interim payments will be made.

In any event, for the reasons given below, it is not anticipated that the project will have significant impacts upon your clients' businesses.

Rampion 2 cable routeing decisions have taken into account direct impacts on business premises raised through Environmental Assessment work (including a review of planning consents) and the consultation responses received. The cable route does not directly go through residential properties or campsites. The Environmental Assessment carried out for Rampion 2 and submitted with the DCO application does not anticipate significant impacts on residential properties or authorised campsite businesses subject to mitigation.

For Horizontal Directional Drilling (HDD) work sites near to noise sensitive receptors should predicted levels exceed the BS 5228 thresholds of significance, mud pumps that operate overnight will be shrouded and the drill will be fitted with acoustic (i.e. high mass) panelling and louvres as well as engine silencers where diesel powered drills are used. Other environmental measures are set out in the Environmental Assessment prepared for the project (Chapter 21: Noise and Vibration (APP REF: 6.2.21) and the Outline Code of Construction Practice OCoCP (APP REF:7.2). These documents will be available to view once the DCO application has been 'accepted' by the Planning Inspectorate (PINS). No significant residual effects are anticipated onshore as a result of the construction, operation or decommissioning of the Proposed Development.

The holiday letting business - Withybridge Cottage is located to the west of the cable route and guests will not have to cross the cable route to access to the property.

The Shepherd's hut and 2x wild tent camping sites are located to the east of the cable route with access across the proposed cable strip. During construction, there may be a period of time where access is reduced due to construction corridor fencing and health and safety management associated with the construction apparatus. However, crossing points can be agreed prior to construction if required.

The period of time subject to noise generating works will be more limited, and as noted above, significant impacts are not anticipated on authorised sensitive uses such as holiday accommodation, subject to mitigation measures set out in the Outline Code of Construction practice. Once the construction is finished, the construction corridor will be reinstated and returned to its previous use for grazing, with no restrictions on access.

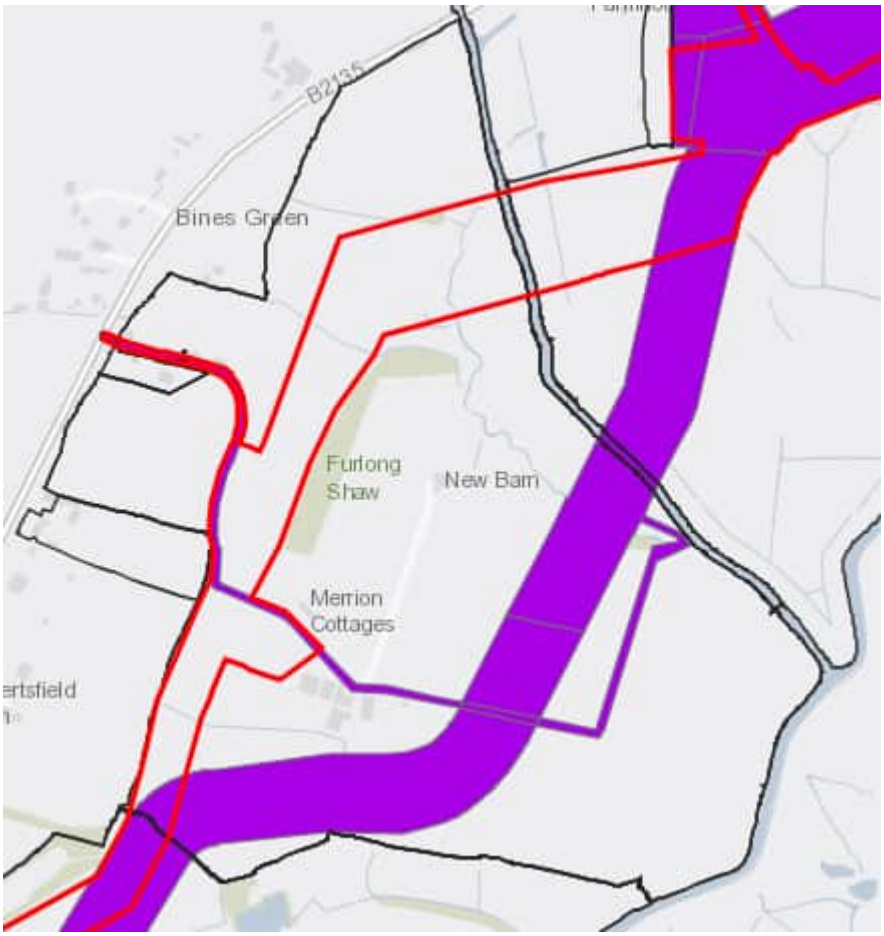
Regular information regarding project programme would be communicated to Mr and Mrs Griffiths in advance of and during the construction to provide a more detailed understanding of the limited time when the trenching and/ or drilling will take place.

5 - The Original Route

Extract from Consultation response dated 28th November 2022

> At the meeting in March Lucy Tebbutt explained to us that it had been decided this route just wasn't feasible as it would not be possible to overcome the engineering challenges posed by working near the existing high pressure gas main and avoiding my clients' slurry lagoon. It seems to me this may be in part because there is an assumption the entry and exit points of the cable route onto Merrion Farm cannot be varied, but from what I could gather this option has not been fully explored and we request that it this is done. Furthermore, we wonder whether it may be possible to HDD the cables under the slurry lagoon, thereby allowing the route to be moved further away from the gas main.

The original search corridor was arrived at by assessing available environmental data, including flood data and ancient woodland data, as well as an understanding of engineering constraints in the area. At this location, the farm is bounded to the east by floodplain and the River Adur, and the B2135 to the west. The project has considered and implemented a different exit point of the cable route from the farm, as identified by the plan below. The exit point has been moved further to the north-west of the farm, which is a different exit point to the original (PEIR) proposals subject to consultation in 2021 (detailed in purple). This change was made further to consultation responses including the response from you and further engineering and environmental assessment work, as well as to avoid the slurry lagoon and gas main. The entry point into the farm was chosen because it would have a lesser impact overall on the above mentioned environmental constraints, including ancient woodland and the water environment. A different entry point would involve routing through a more constrained area and is considered would have a greater environmental impact.



'Furthermore, we wonder whether it may be possible to HDD the cables under the slurry lagoon, thereby allowing the route to be moved further away from the gas main.'

The route was altered further to the initial site visit and consultation in 2021 to avoid the construction of the slurry lagoon on the eastern side of the farm. The cable routing decisions have taken into account the direct impacts on built structures and committed developments, such as the slurry lagoon which forms part of the farm's infrastructure.

6 - Alternative Construction route

Extract from Consultation response dated 28th November 2022

I refer to the engagement form provided by Carter Jonas following the site meeting on the 9th of March. This refers to an alternative construction route one option for which is to use part of the existing farm road and areas either side of the cable route outlined by red shading to facilitate access with a drilling rig.

My clients have extreme concerns about the use of the farm road for any aspects of construction for 2 key reasons:-

(i) due to the interference with the operation of the farm business
(ii) due to the substantial disturbance which will result to users of the holiday and camping facilities referred to above.

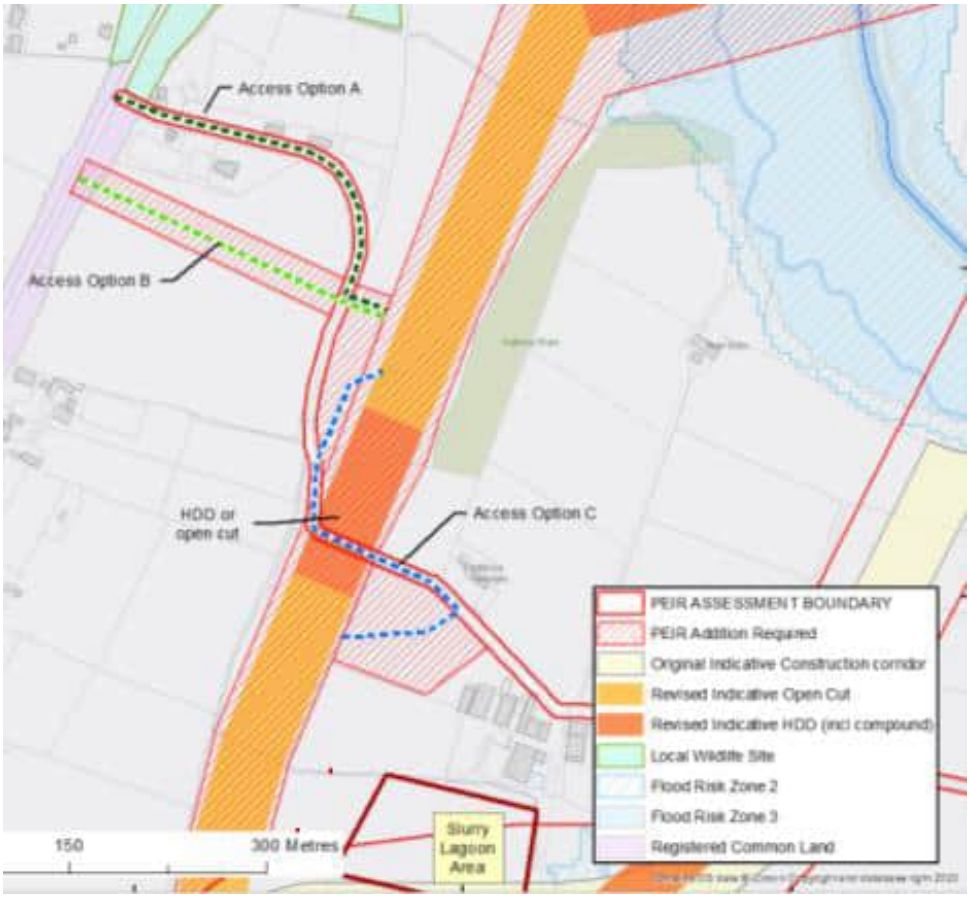
The engagement form refers to an alternative which is to form a separate access from Bines Road and depending on its route this may avoid some of these issues.

On 9th March 2022, two options were presented to yourselves at a site meeting (the below plan was presented to you with engineer Nick Waple present). It was explained that as there is a trenchless crossing at the north-eastern end of the farm, it will be necessary to bring a drilling rig into the area. At this meeting, it was suggested by yourselves that an option that created a new construction access from Bines Green (Option B) to the farm was the less preferable option, with Option A also deemed less preferable by yourselves.

Therefore, as agreed within the meeting and summarised in the engagement notes extract below from 9th March 2022 (sent to you via email on 17th June 2022 and 24th August 2022), the option mentioned above (Option C) was agreed to be taken forwards in order to mitigate impact on the dairy business and allow access for the drilling rig to the northern section of the farm. Our notes of the meeting from 9th March 2022 as follows:

Alternative Construction Route comments:

- As a trenchless crossing is being considered to the north of the site (in order to cross the waterway), there will be a requirement to use a drilling rig in this location.
- In order to facilitate this, the options were:
    1. Create a new construction access heading eastwards from Bines Green directly to the new proposed cable route.
    2. Use part of the existing road to Merrion Farm and areas either side of the cable route (outlined by the red shaded areas above). **This option will be taken to consultation following feedback from the owner, as well as engineering and ecological considerations.**



Should you have any queries or wish to discuss this further please do not hesitate to contact me.

We have sent you key terms for your review and would be happy to discuss mitigation measures which could be captured in detail in a voluntary agreement in order to give you some certainty at an earlier stage of the DCO process.

Yours sincerely

[redacted]

Lucy Tebbutt MRICS
Associate

E: [redacted]@carterjonas.co.uk
[redacted]

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Appendix 17
Letter to Mr & Mrs Fischel 19.07.22

Carter Jonas

2 Snow Hill
Birmingham
B4 6GA
M: 07795 047892

Our ref: WSX136427

Mr & Mrs Fischel
Sweet Hill Farm
School Lane
Ashurst
Steyning
West Sussex
BN44 3AY

19 July 2022

Issued by email 19 July 2022, cc: Robert Crawford-Clarke

Dear Mr & Mrs Fischel,

Overview

Following the initial site meetings in May and July 2021, further site meetings in January and April 2022, and written responses provided by your agent Robert Crawford-Clarke dated 15 February 2021, 25 January 2022 and 11 April 2022, the project has considered your concerns in detail.

Review of Original Route (Turquoise Route)

The feedback you provided on the originally proposed route presented in the July 2021 consultation has led us to acknowledge numerous challenges on this route (highlighted by the turquoise line on the plan below), namely:

- the presence of ponds (many of which are used by great crested newts for breeding) and wet ground within the area that present an ecological constraint;
- the dense ecological habitat (noting from the meeting that the area has also been 're-wilded'); and
- a route review by engineers in July 2021 also revealed that there are construction challenges with the original route as a result of the number of ponds located immediately along the route.

Taking these points into consideration, the project team agreed it was necessary to consider various options for alternative routes in this area, including the alternative routes which you have suggested.

A design change process was therefore initiated which took into account relevant factors from a land, engineering, ecological and commercial perspective, so as to compare the original route with potentially feasible alternatives. This process enabled the interdisciplinary team to review and select the most appropriate design for the project, and, where appropriate, to make recommendations for any suitable mitigation measures and/or cable route modifications to be taken forward for further consultation.

I summarise below our responses to the suggested alternative routes which you have proposed, and explain the project's reasoning for the revised route option which the project intends to consult upon.

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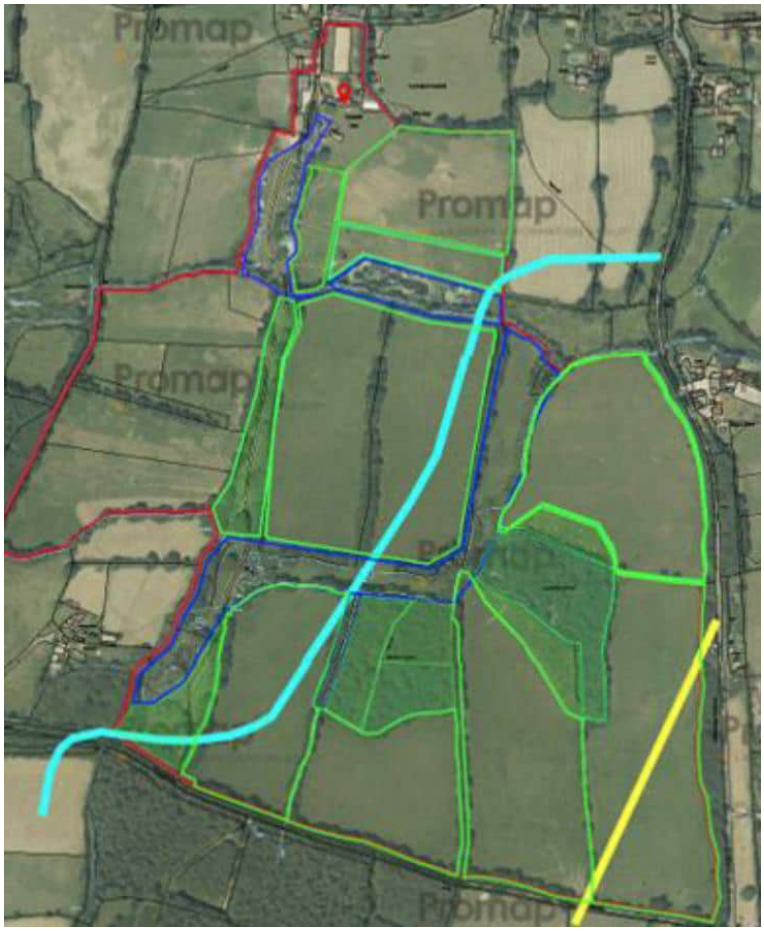
Classification L2 - Business Data

Assessment of the Yellow Route, the 'Sweethill suggested route'



In your representation dated 15 February 2021, your agent Robert Crawford Clarke presented an alternative proposal as indicated by the yellow line on the above map. Referring to the cable route, he explained that:

> *'We see no reason why it could not instead pass to the south and east of Calcot Wood, and then to Spithandle Lane and enter Sweethill Farm at or near the south east corner. It could then pass across this limited and less ecologically sensitive area and out across the B2135 Horsham Road. This would have 2 key benefits: -*
>
> - *It would dramatically reduce all the impacts referred to above to a level which, although undesirable, my clients would find more tolerable.*
> - *By avoiding the various ponds and watercourses and the wettest areas of the farm, it would provide far better ground conditions for you to work in as well as enabling greatly improved access'.*
>
> *'In summary, in the event the Rampion 2 does not come up with a substantially revised route from that currently proposed, we see this alternative route through Sweethill Farm as a win for both yourselves and my clients'.*

You have queried whether the project team has looked at the specific route shown in yellow on the above plan, "Assessment of the Yellow Route, the 'Sweethill suggested route'". I can confirm that this route was assessed, that this assessment included consideration of how the section could re-join the proposed cable

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route to the north and south of your land parcel (as illustrated by the orange line on the diagram below), taking into account whether it could be moved in the context of constraints within the immediate surrounding area. However, we believe that the suggested route in yellow does not provide an appropriate alternative route; and it has been discounted by the project for reasons that include the following:

1. Engineering challenges which include:
    a. the 'yellow' route is 300m longer than the original proposed 'turquoise' route, and would require two additional trenchless crossings (including one 120m in length under established trees and one under Spithandle Lane). This is in comparison to the original route which includes only one trenchless crossing underneath both Calcot Wood and Spithandle Lane;
    b. the fields would not be easily accessible (as trenchless crossings create land-locked areas), given the lines of established trees / deep ditches and are further from the road. This would require creation of two construction accesses (900m additional) which would give rise to consequential environmental considerations (please see the diagram below). In comparison, the current proposals can use access via the gateway from Spithandle Lane without creating a new construction access.

2. From an environmental perspective:
    a. the 'yellow' route would have to navigate a greater number of thick hedgerow crossings, a section of woodland and watercourses;
    b. one of these would have to be a trenchless crossing under an established woodland section where there is a record of a main badger sett (a licenced species);
    c. the route would have to cross a watercourse in two locations, creating additional habitat loss as a result of disturbance;
    d. the proposals also run through a pinchpoint between ancient woodland and another small copse, where the standoff of 25m from surface works to ancient woodland (an environmental measure committed to by the project) may be compromised.

3. It should also be borne in mind that the project is under a statutory duty pursuant to the Electricity Act 1989 to develop an 'economic and efficient' electricity network scheme. The additional lengths, crossings, access and mitigation measures that would be occasioned by the 'yellow' route risks undermining the project's ability to meet these obligations.

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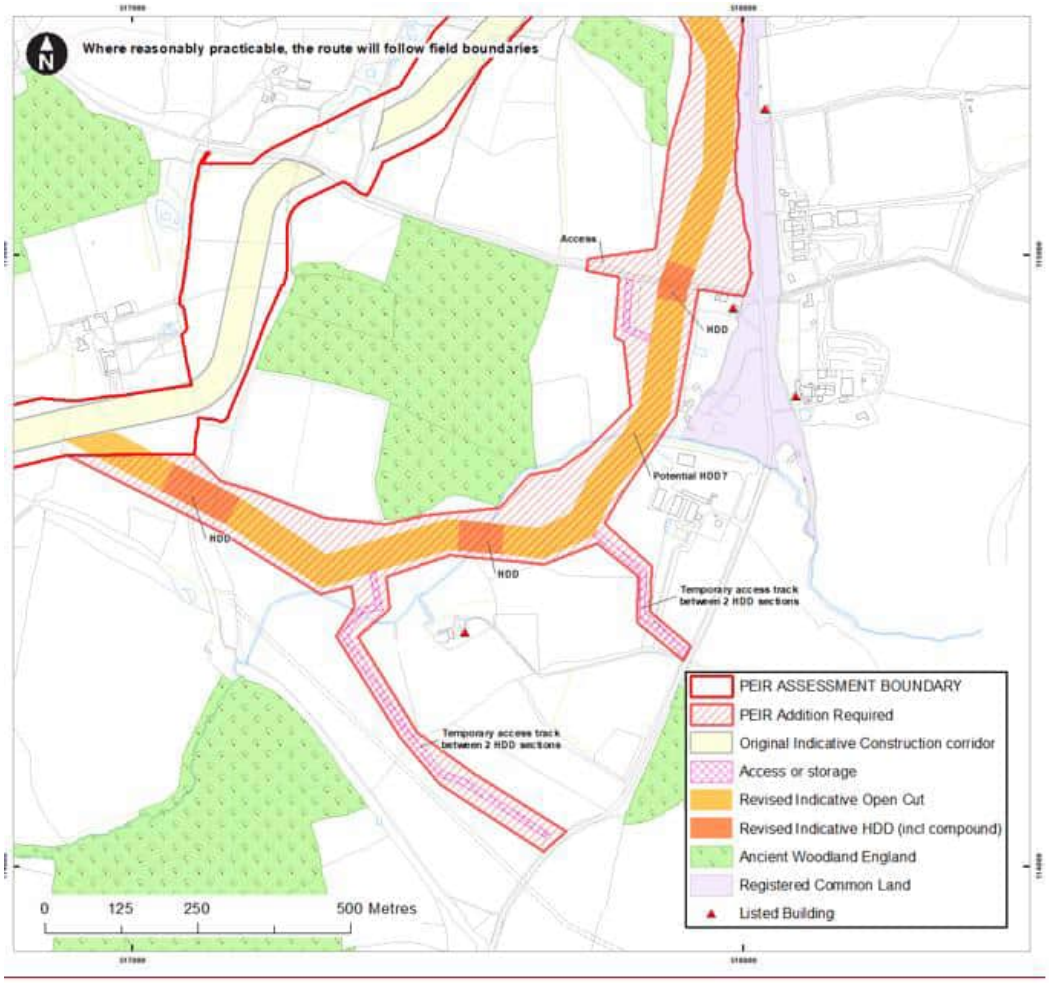

Calcot Wood

In your representations dated 25 January 2022, you queried why the cable was not proposed to pass through Calcot Wood, and questioned our classification of this woodland :

> *'we note that you have tried to avoid the cable route passing through Calcot Wood to the south of the farm, due to concerns about it being Ancient Semi Natural Woodland (ASNW). I have checked the Government's Magic Map and note that the area we were looking at is not designated as ASNW; rather it is Ancient Replanted Woodland, reflecting the fact that, as we saw on site, this is a plantation of relatively mature Scots Pine with minimal understorey and thus of limited biodiversity value, albeit that it is on the site of what was once ancient woodland. It is only a small section at the south end which is classified as ASNW.'*
>
> *'We also noted on site that there is a substantial clearing running diagonally though the wood from Doves Farm out to Spithandle Lane which would be wide enough to provide a corridor for the cables, including the working width necessary to lay them, if required.'*

This was also discussed at the site meeting in January 2022, when you raised the prospect of open cutting through Calcot Wood within the space of the existing forestry track clearing. We can confirm that part of the woodland is a Plantation on an Ancient Woodland Site (PAWS) and as such is given a high level of protection through planning policy (i.e. damage or degradation of these habitats – particularly the soil for PAWS – can only be consented if there are 'exceptional' reasons as judged by the Secretary of State).

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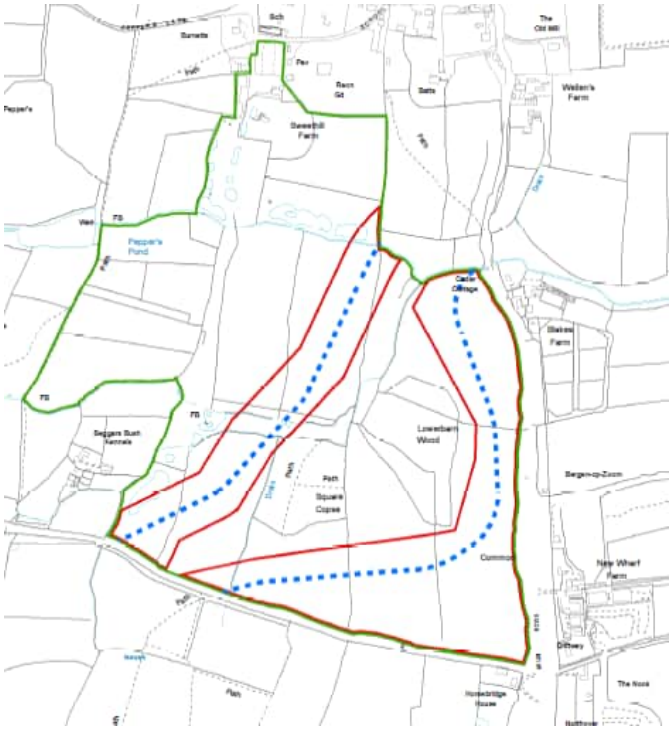
We have also explored the option of routing through the clearing / opening that runs diagonally through the wood. However it is not wide enough to provide a corridor for the cables, and the cable route would need to encroach into designated ancient woodland towards its northern extent.

Revised Proposals

Whilst the 'yellow' route is not suitable, the project team has taken into account the comments raised within your landowner responses and has proposed a revised route which seeks to avoid the principal areas of concern raised by you. This route is shown indicatively on the plan below, to the east of the original 'turquoise' route and the project proposes to consult on this route later this year. You can see that it overlaps with the section of the 'yellow route' that sits within your land-take.

The revised route option seeks to minimise impacts and provide the best alternative route from an engineering, land, environmental and commercial perspective. Having regard to the concerns which you have raised, please note that the proposed revised route achieves the following:



1. **Completely avoids the rewilding area to the west of the land (reducing amenity and environmental impacts)**
    - This then avoids the '*mature trees and wildlife haven of thick scrubland, a large pond, wetland and a number of bee hives'; 'extensive wetland, many specimen oaks in hedgerows, and extensive areas of the species rich grassland and mature oaks'* which you raised as a concern in your representation of 15 February 2021;

2. **Completely avoids '*ponds and watercourses and the wettest areas of the farm'*,** as requested in your representation dated 15 February 2021. This minimises the effects on biodiversity as it completely avoids the many ponds dotted around the property. It also minimises impacts on '*great crested newts, bats, bitterns, rare water-wort, mature oaks and rare service trees'*.

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3. **Includes a trenchless crossing under Calcot Wood** which will avoid an open cut trench through both the wood and the road in one go, as well as avoiding the mature oaks on the roadside.

4. **Minimises the effects on mature boundary oak tree lines and field boundaries in the fields to the south of the land, bordering Spithandle Lane.**
   A trenchless crossing is proposed to extend under Calcot Wood for a greater length to surface beyond the tree line bordering Spithandle Lane, avoiding the first tree line / hedgerow (below the wording of 4. Row of Oaks within your plan).

   For the three remaining 'continuous hedgerows that contain mature trees' (outlined in the photo below) that separate the fields we now propose the following ways to minimise construction impact:
   - Adopting a special technique to weave the cable routes between gaps and push them through underground to minimise damage to roots for two of the treelines.
   - One of these (the northern one) has few oaks and a clear path between gaps to navigate through.
   - Reduced working width at these points if necessary.
   - Use the existing field access routes to avoid the need to cut a gap for a haul road.

   These mitigations will in turn allow further distance from the trees, minimising *'root damage and compaction of the area surrounding them',* as requested out in your representation dated 25 January 2022.

   In addition, as outlined by your 'Sweethill suggested route', there is an existing double gate to the southern boundary of your property leading onto Spithandle Lane which could be used as a construction and possibly future operational access point.

5. **Proposes a Trenchless Crossing at the north-eastern corner boundary** - in order to avoid the watercourse and minimise impact on biodiversity. As outlined within your representation dated 25 January 2022 this is a *'very wet, low lying area prone to flooding'.*

6. **Takes a shorter route** than the proposed 'Sweethill proposed route', albeit slightly longer than the original turquoise route.

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It should be noted that the proposed revised route has not been fixed within the area to be consulted on. The indicative centreline alignment has been shown on the above plan for the purpose of indicating survey distances. The project are seeking to survey the wider route area to collect the same type of information on the alternative route as what we have for the original area.

Moving Forwards

Through our engagement with you to date, (including on site meetings on 14 May 21, 08 July 21, 23 July 21 (landowner surgery), 21 January 22 and 25 April 22, calls and emails), we have sought to understand your concerns, respond to them and to review your suggested route options. We consider that the above proposed alternative route which we intend to take forward to consultation addresses a significant number of your concerns whilst also ensuring that the project can be delivered on an economic and efficient basis.

The upcoming consultation later in the year will provide a further opportunity for you to comment on the proposed alternative routes.

I am sorry to hear that you did not feel happy with granting survey access. We have now missed data for the month of June and hope to come to an agreement to continue surveys as soon as possible in July. As discussed, the data will be important to ensure the project is fully aware of all the ecological considerations on your land.

You have questioned why we are still seeking to survey the original route, in addition to the proposed revised route. Whilst the project's strong preference is to drop the original (turquoise) route, a final decision cannot be taken on the route to be adopted until the upcoming consultation has concluded. Wood Group therefore need to continue to survey both the original and the area for any alternative routes. This is standard approach for the land-take areas that will be in scope for consultation.

I hope this clarifies the position.

If convenient, I will seek to call Robert on Wednesday the 20th July in the hope that the request for survey access can be furthered.

Yours Sincerely,

Lucy Tebbutt

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Appendix 18
Letter to Mr & Mrs Fischel 17.10.23

Carter Jonas

3 Royal Court
Kings Worthy
Winchester
SO23 7TW

Your ref: Rampion 2
Our ref: WSX136427

Mr & Mrs Fischel (care of Robert Crawford-Clarke)
Sweet Hill Farm
School Lane
Ashurst
Steyning
West Sussex
BN44 3AY

17 October 2023

Issued by email 17 October 2023, cc: Robert Crawford-Clarke

Dear Mr & Mrs Fischel,

CC: Robert Crawford-Clarke

RESPONSE TO QUERIES RAISED THROUGH AND POST CONSULTATION (28 NOVEMBER 2022 – 7 JUNE 2023)

I am writing to set out a comprehensive response to all the queries raised in the following correspondence:

- Fischel Formal Consultation Response 28 November 2022 Amended
- 27 April 2023 – Email sent by Robert Crawford-Clarke summarising main concerns
- 6 & 7 June 2023 – Follow up emails sent by Robert Crawford-Clarke

Thank you for your comments and photographs included within your response from the latest consultation (November 2022). We include our comments below and attach our letter from July 2022.

We understand that Mr & Mrs Fischel have requested the following:

1. Explanation of the rationale behind the proposed route
2. Re-route proposed: Exit Sweet Hill Farm further South to meet the B2135 Steyning Road further South thereby both better distancing the route from the Ancient Semi- Natural Woodland Lowerbarn Wood and avoiding the engineering complexities of TC14. Detailed below as **Option A**.
3. To extend the tunnelling of TC-13 under one further field and hedgerow/ line of oaks
4. Environmental Survey Outputs
5. Mr & Mrs Fischel believe the DCO width is too wide and request for Plans of the DCO Boundary

Our corresponding responses are set out below:

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Classification L2 - Business Data

1 - Explanation of the rationale behind the proposed route

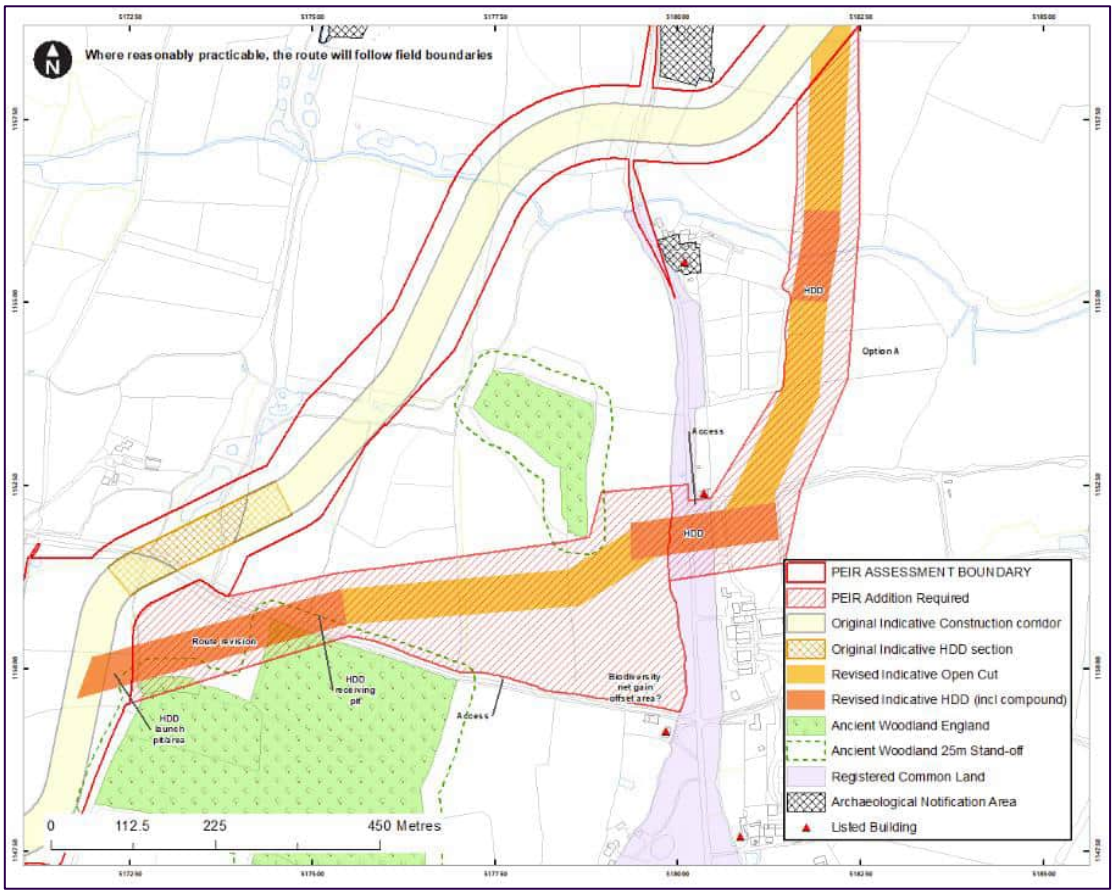
Rampion 2 has followed a design evolution process for all areas of the onshore cable route including this section of land owned by Mr & Mrs Fischel. In summary, the proposed route has been selected to be part of the final proposals by weighing up engineering, environmental, land interest and economic implications of alternative options. The assessment of alternatives in this area was triggered in part by valuable consultation feedback from Mr & Mrs Fischel on the originally proposed PEIR design. The decision to implement an alternative to the PEIR design means the engineering challenges, ecological impacts and residential amenity impacts associated with that route are reduced as set out in the letter dated July 2022.

The key steps for the route selection on Mr and Mrs Fischel's land are set out below:

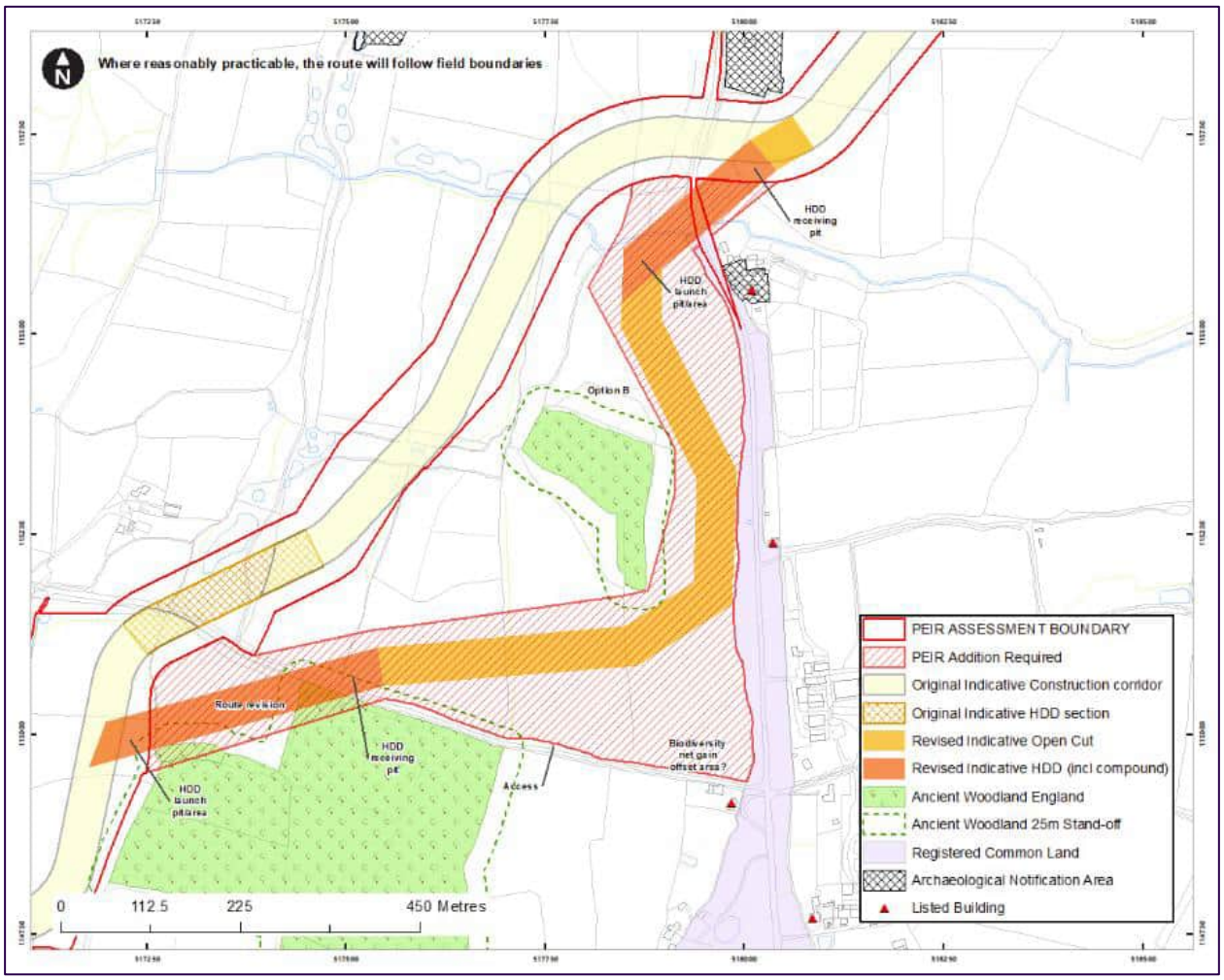
Mr & Mrs Fischel responded to the July 2021 consultation in relation to the originally proposed Rampion 2 (PEIR) route. This is referred to as the PEIR route in this correspondence. The Rampion 2 team were made aware of additional local constraints through the informative consultation feedback from Mr and Mrs Fischel and additional site visits both prior to and following consultation. Further to that consultation response, alternative route options were considered by Rampion 2. These included "Option A" – a route put forward by Mr & Mrs Fischel formally in July 2021 and verbally at site meetings, and "Option B", a variation of "Option A" put forward by the Rampion 2 team. Subsequently, the routes were compared with each other and a site visit took place 21st January 2022, and a follow up on 25th April 2022.

For ease, the original PEIR route and Option A, and Option B are illustrated within the plans below.

Option A:

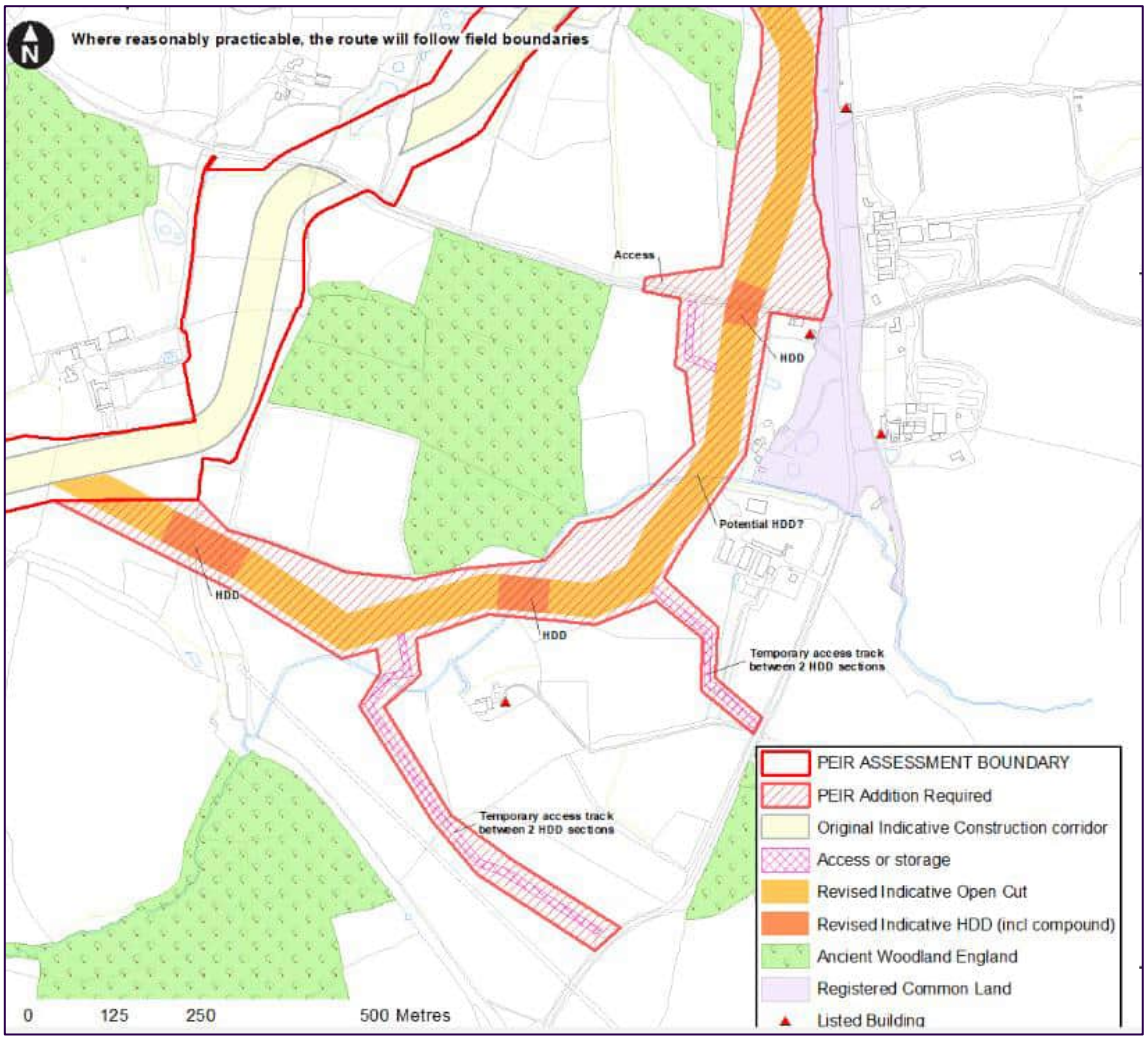


Option B:


Where reasonably practicable, the route will follow field boundaries
HDD receiving pit
HDD launch pit/area
Option B
Route deviation
HDD receiving pit
HDD launch pit/area
Access
Biodiversity net gain offset area?
0
112.5
225
450 Metres
PEIR ASSESSMENT BOUNDARY
PEIR Addition Required
Original Indicative Construction corridor
Original Indicative HDD section
Revised Indicative Open Cut
Revised Indicative HDD (incl compound)
Ancient Woodland England
Ancient Woodland 25m Stand-off
Registered Common Land
Archaeological Notification Area
Listed Building

Option C: 'Yellow Route: the preliminary 'Sweethill suggested Route':

A further route proposed Mr & Mrs Fischel was discussed at a site visit in January 2022 'The Yellow Route' and discussed verbally, builds on 'the preliminary Sweethill suggested route' described by Mr & Mrs Fischel. This is detailed within the letter dated 19 July 2022, sent by Lucy Tebbutt to Mr & Mrs Fischel. However, for ease, we have copied a plan of the route below.



Further to Rampion 2's assessment of route options, Option B was concluded to be the preferable route and was subsequently presented for consultation in October 2022. Further, Option B was then selected as the final design for the DCO application due to it have the fewest impacts. Section 5 of this letter presents the relevant final plan.

2. Re-route proposed - Exit Sweet Hill Farm further South to meet the B2135 Steyning Road further South thereby both better distancing the route from the Ancient Semi- Natural Woodland Lowerbarn Wood and avoiding the engineering complexities of TC14. Detailed below as Option A.

Key reasons why Option B has been selected:

- **Engineering technical, logistics and economics:** Option B has the shortest length of cable route, the fewest HDD's and less constrained access from Spithandle Lane and the B2135.
- **Ecology:** Option B is preferable to Options A and C as the access arrangements for this option and the HDD crossings reduce the number of hedgerow crossings that are "open cut". In addition, Option C includes a protected species constraint that is avoided by Option B (see section below).

Summary of issues associated with Option A:

To summarise this route compares less favourably than the selected 'Option B' for the following key reasons:

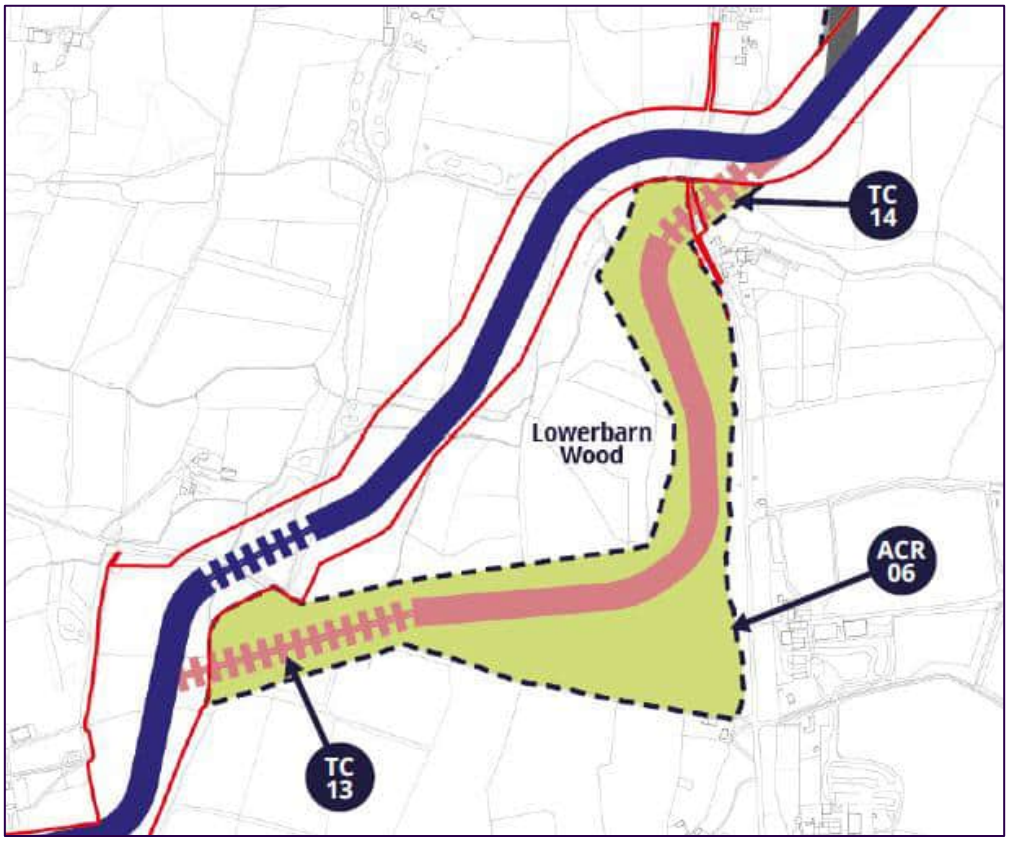
- **Engineering technical, logistics and economics:** Option A (Mr & Mrs Fischel's proposal) would require the addition of two more HDD sites (although one of these could substitute for the B2135 crossing if this would be HDD).
- **Historic Environment and Heritage:** Option A (Mr & Mrs Fischel's proposal) lies within 200m of Grade II listed Horsebridge House (1027454) (though site boundary is within 30m) and Blakes Farmhouse (1353943), within 30m of Grade II listed Bergen-op-Zoom Cottage (1393335) and near to multiple Grade II listed buildings at Ashurst village. These designated heritage assets may be adversely affected through temporary changes to setting during construction, though any significant effects would be temporary. Note for Option B there is greater screening from intervening tree line and the road when compared to Option A.
- **Land Interest:** Option A would involve directly crossing Common land which is located adjacent to the B2135, as well as impacting users of the PRoW east of Blakes Farm. Option B avoids this land consideration.
- **Land Interest:** Option A has construction impacts (visual, noise etc) on New Wharf Farm and New Wharf Campsite where the access track to the campsite would be directly affected by open cut crossing.

Summary of issues associated with Option C:

Of the alternatives to the Original Rampion 2 (PEIR) route, this was most constrained both in terms of potential environmental, and engineering issues. Rampion 2 provided a detailed description of the issues on this Option in its letter dated 19 July 2022 (attached as an Appendix).

3 – Request to extend the tunnelling of TC-13 under one further field and hedgerow/ line of oaks

At the Washington Village Hall Drop-In event on 12 November 2022, Mr & Mrs Fischel spoke with Rob Gully and discussed the possibility of extending the HDD in this location to tunnel under one further field and hedgerow/ line of oaks. Please see plan below detailing TC-13.



The additional trenchless crossing (TC), extending TC13 under the additional field, hedgerow and line of oaks proposed by your client could not reasonably be justified. TCs require additional engineering works and result in increased costs, therefore Rampion 2's construction management approach is only to propose TCs where the Rampion 2 team has identified specific environmental or engineering constraints (e.g. roads, rivers) which require a TC to be adopted. The line of vegetation that Mr & Mrs Fischel are concerned about has been subject to survey which has not identified any designation under legislation or policy though the presence of the mature oaks in the tree line . The various factors affecting the suggested additional TC have been considered and the project considers the additional cost and engineering complexity outweighs the impacts.

The project has the following mitigations in place to minimise the impacts on vegetation across the board:

Hedgerows and tree lines crossed by the cable route will be 'notched' to reduce habitat loss and landscape and heritage impacts wherever possible. This is defined as temporarily displacing one or more short sections (notches) within the same hedgerow or tree line. In this instance, the losses will be kept to 20m total as committed to in the DCO Application.

Reinstatement will be as per the proposals in the Outline Landscape and Ecology Management Plan and will be subject to monitoring over a period of 10 years, and remedial action taken rapidly where signs of failure are identified.

Exit pit location of TC14: To help mitigate the impacts of TC in this location, the detailed positioning can be discussed with your client. The HDD pit is not specified on the works plans. There is flexibility in the location of the trenchless crossing compound and an appropriate distance between the house and the edge of the HDD compound.

4 – Request for Environmental Survey Outputs

Extract from Consultation response dated 28th November 2022

> On various occasions, both we and our client have been promised the results of the various environmental surveys your consultants have undertaken on her land, but to date these have not been received. We assume your current proposals on the cable route take into account these results, and wish to place on record that it is unreasonable to expect our client to engage in this consultation process without this information.

As you are aware the cable route is over 40km long and survey data is largely digitised for the whole stretch. The Preliminary Environmental Information Report (PEIR) and supplementary report set out information on surveys carried out and findings, for example, relating to habitats and protected species along the cable route. This information has now been taken from raw survey data, drawn together and analysed by our Environmental Impact Assessment consultants and the most up to date results presented in the Environmental Statement (ES) in accordance with the relevant guidance and legislation from organisations such as Natural England. This ES has been submitted with the DCO application material which is available to view at . https://www.gov.uk/government/organisations/planning-inspectorate.

Rampion 2 has been advised by its environmental consultant that forwarding the raw data is unlikely to be informative, however we can signpost information from the ES relevant to specific survey areas of interest that Mr & Mrs Fischel have. In particular, given Mr & Mrs Fischel's interest in biodiversity they can find the summary outputs of survey results for their specific section of the cable route presented in various sections of Appendix 22 of the ES.

For example, they can view Figure 22.17.3 and 22.17.6t in the Appendix 22.17: Bat tree ground level visual assessment survey report, which is accessible here:

https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010117/EN010117-000248-6.4.22.17%20Rampion%202%20ES%20Volume%204%20Appendix%2022.17%20Bat%20tree%20ground%20level%20visual%20assessment%20survey%20report.pdf

The link to the full set of Appendix 22 documents is available here:

https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/EN010117/documents?date-from-day=&date-from-month=&date-from-year=&date-to-day=&date-to-month=&date-to-year=&searchTerm=Appendix+22&itemsPerPage=25

In addition, see the Tree Preservation Order and Hedgerow Plan – Sheet 26:

https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010117/EN010117-000162-2.6%20Rampion%202%20Tree%20Preservation%20Order%20and%20Hedgerow%20Plan.pdf

And the Vegetation Retention Plan which is Appendix B within the Outline Code of Construction Plan:

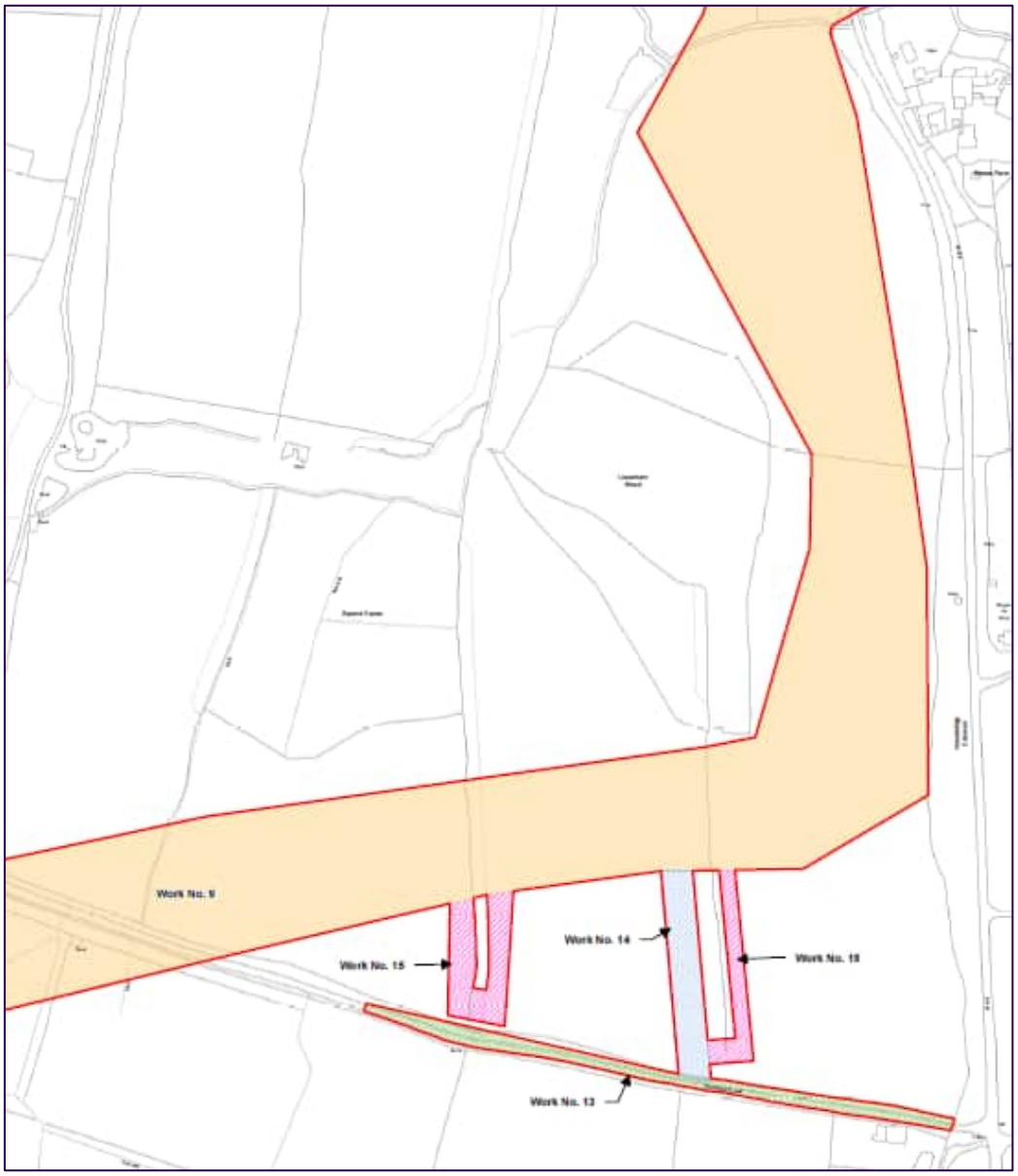
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010117/EN010117-000194-7.2%20Rampion%202%20Outline%20Code%20of%20Construction%20Practice.pdf

5 – Concerns about the DCO width and Boundary

Extract from Consultation response dated 28th November 2022

> It is very difficult to comment fully on the latest proposals when the red line on the plan is drawn to cover such a wide area. This leaves the actual proposed cable route open to very broad interpretation. If all the data you have gathered to date has been properly analysed by you, then we see no reason why a more accurate indication of the proposed route options cannot be shown on the map. Again, it is unreasonable to expect our client to comment fully on your latest proposals without this information.

Please see below plan of the proposed cable route area shown coloured brown and accesses coloured blue to be included within the DCO boundary. The DCO boundary is wider than the construction corridor and permanent cable easement which are anticipated to be in the region of 40m wide and 20m wide respectively. However further surveys and ground investigations will be required prior to construction to determine the exact route to be taken within the corridor. Land use constraints can be factored into this detailed routeing, and we would welcome further discussion about this.



Key

Development Consent Order Limits

Works Area Descriptions

Work No. 9 - Cable installation works (including construction and operational access)

Work No. 13 - Temporary construction access

Work No. 14 - Construction and operational access

Work No. 15 - Operational access

For Work No: refer to Schedule 1 of the Development Consent Order

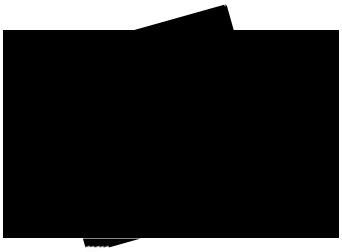
Should you have any queries or wish to discuss this further please do not hesitate to contact me.

We have sent you key terms for your review and would be happy to discuss mitigation measures which could be captured in detail in a voluntary agreement in order to give you some certainty at an earlier stage of the DCO process.

Included:

Appendix 1 (Letter response dated 19 July 2022)

Yours sincerely



Lucy Tebbutt MRICS
Associate

[redacted]@carterjonas.co.uk
[redacted]

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Appendix 19
Email to G Streeter 23.05.22

Coombes, Sean

From:	DAlessandro, James
Sent:	13 May 2022 16:58
To:	Guy Streeter
Cc:	Weighill, Vaughan; Abbott, Nigel; Matt Gilks; Bell, Andrew
Subject:	College Wood Farm - Proposed Meeting 25th May PM
Importance:	High

Dear Guy,

Thank you for your email below, to Vaughan.

To explain further the point that I mentioned regarding the proposed Horizontal Directional Drill under Kent Street:

- Among the various changes that the Rampion 2 project has identified to the plans that were published during the formal consultation exercise, in summer 2021, is a new proposal for the use of a trenchless crossing method (Horizontal Directional Drilling) to cross the northern end of Kent Street. We had previously identified a proposal for cables to cross the road at this location, but had not proposed the use of a trenchless crossing method.

- This new proposal would not involve the drilling rig being located on Mr Dickson's side of Kent Street (this would be would be located on the other side of the road), but the cables would enter Mr Dickson's land via a Horizontal Directional Drill exit pit on his property. We will therefore consult with Mr Dickson on this new proposal during a second formal consultation process that we intend to run during late spring/early summer 2022.

I hope that the above explanation is helpful.

Best Regards,

James.

James D'Alessandro
Commercial Manager

[redacted]
mailto:[redacted]@rwe.com

Rampion 2 WIND FARM

RWE Renewables UK
Greenwood House
Westwood Way
Coventry

CV4 8PB

Web: www.rwe.com/rwe-renewables-uk
Twitter: @RWE_UK
Instagram: @rwe_uk

Registered Office:
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RWE Renewables Management UK Limited: Windmill Hill Business Park, Whitehill Way, Swindon, Wiltshire SN5 6PB. Registered in England and Wales no. 12087808

From: Guy Streeter [redacted]@savills.com>
Sent: 11 May 2022 14:35
To: Weighill, Vaughan [redacted]@rwe.com>
Cc: [redacted]@carterjonas.co.uk; [redacted]@thrings.com; Bell, Andrew [redacted]@rwe.com>
Subject: [EXT] RE: College Wood Farm - Proposed Meeting 25th May PM

Dear Vaughan

Thank for your confirmation and I look forward to meeting you, Nigel and Andy Bell on the 25th May at 2:30pm.

Ahead of that meeting please could I ask that you give me an update on Kent Street. Our last meeting did not really touch on this other than James mentioning that there was an intention to land an HDD drill into Mr Dickson's land, which I assume is to do with going under the road. Some clarity on this would be helpful before the meeting in case there is a need to discuss this too. My client does not feel that he has had any real dialogue on Kent Street and only a limited amount of consultation on College Wood Farm.

Kind regards

Guy

Guy Streeter MRICS FAAV
Director – RICS Registered Valuer
Rural Professional

Savills, Exchange House, Petworth, GU28 0BF
Tel [redacted]
Mobile : [redacted]
Email [redacted]@savills.com
Website : www.savills.co.uk

Before printing, think about the environment

From: [redacted]@rwe.com [redacted]@rwe.com>
Sent: 10 May 2022 13:20
To: Guy Streeter [redacted]@savills.com>

Cc: [redacted]@carterjonas.co.uk; [redacted]@thrings.com; [redacted]@rwe.com
Subject: RE: College Wood Farm - Proposed Meeting 25th May PM

EXTERNAL EMAIL: Be cautious when opening attachments or clicking links

Sorry for the slow response - thanks for the update Guy, I confirm this is in our diary for 25th at 1430 onwards at College Wood Farm.

It will be myself, Nigel, our engineer Andy Bell and I may also bring one of the consent/environment team (TBC just checking availabilities)

Cheers
V
Vaughan Weighill
Project Manager

[redacted]
mailto:[redacted]@rwe.com

Rampion 2 WIND FARM

RWE Renewables UK
Greenwood House
Westwood Way
Coventry
CV4 8PB

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Twitter: @RWE_UK
Instagram: @rwe_uk

Registered Office:
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From: Guy Streeter [redacted]@savills.com>
Sent: 05 May 2022 15:03
To: Weighill, Vaughan [redacted]@rwe.com>
Cc: Abbott, Nigel [redacted]@carterjonas.co.uk>; [redacted]@thrings.com
Subject: [EXT] College Wood Farm - Proposed Meeting 25th May PM

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Dear Vaughan

I had a good meeting with Mr Dickson on Tuesday and he would be available for a meeting on the afternoon of the 25th of May. I look forward to hearing if you, Nigel Abbott and your engineer could attend.

Kind regards

Guy

Guy Streeter MRICS FAAV
Director – RICS Registered Valuer
Rural Professional

Savills, Exchange House, Petworth, GU28 0BF
Tel [redacted]
Mobile [redacted]
Email [redacted]@savills.com
Website : www.savills.co.uk

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Appendix 20
Email to G Streeter 22.11.22

Coombes, Sean

Subject: FW: DHL Re-direct? //FW: Rampion 2 - College Wood Farm - Mr T Dickson

Importance: High

From: Guy Streeter [redacted]@savills.com>
Sent: 22 November 2022 15:55
To: Weighill, Vaughan [redacted]@rwe.com>
Cc: [redacted]@carterjonas.co.uk; [redacted]@carterjonas.co.uk; Rampion@carterjonas.co.uk; Rampion2 <rampion2@rwe.com>
Subject: [EXT] RE: Rampion 2 - College Wood Farm - Mr T Dickson

Dear Vaughan

Mr Dickson has actually gone away on holiday, so if this is to be signed for then it might be best for you to redirect the package to me at my office address and I'll give this to him in person.

Kind regards

Guy

Guy Streeter MRICS FAAV (He/Him)
Director – RICS Registered Valuer
Rural Professional

Savills, Exchange House, Petworth GU28 0BF

Tel [redacted]

Mobile [redacted]

Email [redacted]@savills.com

Website : www.savills.co.uk

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From: [redacted]@rwe.com [redacted]@rwe.com>
Sent: 22 November 2022 13:56
To: Guy Streeter [redacted]@savills.com>
Cc: [redacted]@carterjonas.co.uk; [redacted]@carterjonas.co.uk; Rampion@carterjonas.co.uk; rampion2@rwe.com
Subject: RE: Rampion 2 - College Wood Farm - Mr T Dickson

EXTERNAL EMAIL: Be cautious when opening attachments or clicking links

Dear Guy

We have just received a notification from DHL that they attempted delivery to Mr Dickson's address but no one was in to receive and sign for the package.

So we need to provide them with an alternative delivery window - can you please advise?

Thanks
V

Vaughan Weighill
Project Manager

[redacted]
mailto:[redacted]@rwe.com

Rampion 2 WIND FARM

RWE Renewables UK
Greenwood House
Westwood Way
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CV4 8PB

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From: Weighill, Vaughan
Sent: 21 November 2022 16:16
To: Guy Streeter [redacted]@savills.com>
Cc: [redacted]@carterjonas.co.uk; [redacted]@carterjonas.co.uk; Rampion@carterjonas.co.uk; Rampion2 <rampion2@rwe.com>
Subject: RE: Rampion 2 - College Wood Farm - Mr T Dickson

Dear Guy

Quick update: I've had confirmation from the team member organising this that a set of files (streamlined where possible, e.g. removing offshore chapters) has been dispatched and should arrive with Mr Dickson tomorrow.

The courier is DHL, with the following tracking number: 1270092040

Kind regards
V

Vaughan Weighill
Project Manager

[redacted]
mailto:[redacted]@rwe.com

RWE Renewables UK
Greenwood House
Westwood Way
Coventry
CV4 8PB

Web: www.rwe.com/rwe-renewables-uk
Twitter: @RWE_UK
Instagram: @rwe_uk

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From: Guy Streeter [redacted]@savills.com>
Sent: 18 November 2022 10:06
To: Weighill, Vaughan [redacted]@rwe.com>
Cc: [redacted]@carterjonas.co.uk; [redacted]@carterjonas.co.uk; Rampion@carterjonas.co.uk; Rampion2 <rampion2@rwe.com>
Subject: [EXT] RE: Rampion 2 - College Wood Farm - Mr T Dickson

Dear Vaughan

Thank you for your email.

I have left a message on your mobile. Essentially, Mr Dickson is interested in the PEIR information where it relates to his property. I hope this information can be extracted so you don't need to courier unnecessary information/paperwork.

Kind regards

Guy

Guy Streeter MRICS FAAV (He/Him)
Director – RICS Registered Valuer
Rural Professional

Savills, Exchange House, Petworth GU28 0BF
Tel [redacted]
Mobile [redacted]
Email [redacted]@savills.com
Website : www.savills.co.uk

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From: [redacted]@rwe.com [redacted]@rwe.com>
Sent: 17 November 2022 18:40
To: Guy Streeter [redacted]@savills.com>
Cc: [redacted]@carterjonas.co.uk; [redacted]@carterjonas.co.uk; Rampion@carterjonas.co.uk; rampion2@rwe.com
Subject: RE: Rampion 2 - College Wood Farm - Mr T Dickson

EXTERNAL EMAIL: Be cautious when opening attachments or clicking links

Dear Guy

I confirm we have received your request and are actioning the provision of hard copies. Apologies that you do not appear to have had a reply to this effect from the team.

Before we dispatch this can I please flag that the full PEIR in hard copy comprises around 18 ring binders in total (attached photo of a single set for reference)

So I wanted to check that this won't be a problem if this volume of paperwork is delivered directly to Mr Dickson? To reduce the amount of files sent, we could exclude the offshore sections (I believe this is 4 -5 files), unless you wish to have the full documentation for completeness.

Could you please confirm and I will instruct right away?

Separately, by way of update the response to the letter sent to Tom Glover on 8th November is being progressed with intention of a response early next week.

Kind regards
V

Vaughan Weighill
Project Manager

[redacted]
mailto:[redacted]@rwe.com

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From: Guy Streeter [redacted]@savills.com>
Sent: 17 November 2022 13:14
To: Weighill, Vaughan [redacted]@rwe.com>
Cc: Nigel Abbott [redacted]@carterjonas.co.uk) [redacted]@carterjonas.co.uk>; Tebbutt, Lucy [redacted]@carterjonas.co.uk>; SM - Rampion <Rampion@carterjonas.co.uk>; Rampion2 <rampion2@rwe.com>
Subject: [EXT] RE: Rampion 2 - College Wood Farm - Mr T Dickson

Dear Vaughan

Thank you for your email. I would like all correspondence between my client, me as his agent, his previous agent and RWE, Carter Jonas (including that with Richard Fearnall) and any other consultant to be included as formal responses to the consultation.

I am intending to provide a full consultation response upon hearing from RWE in response to my emailed letter (attached) which was submitted to the consultation email address on the 7th November 2022. The automatic response to my enquiry indicated that RWE would aim to respond within 5 working days, which would have been Monday evening. Time is now running out and I am concerned that my client is now being discriminated against by his lack of use of computers and email. RWE should have provided him full information about the current consultation and considered his and others with similar needs as part of an Equality Impact Assessment to ensure the processes and procedures adopted were fair and complaint with the Equality Act 2010.

Please can you confirm my request made on the 7th of November 2022 is being dealt with and that the requested information is being sent to my client.

With kind regards

Guy
Guy Streeter MRICS FAAV (He/Him)
Director – RICS Registered Valuer
Rural Professional

Savills, Exchange House, Petworth GU28 0BF
Tel [redacted]
Mobile [redacted]
Email [redacted]@savills.com
Website : www.savills.co.uk

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From: [redacted]@rwe.com [redacted]@rwe.com>
Sent: 11 November 2022 18:48
To: Guy Streeter [redacted]@savills.com>
Subject: RE: Rampion 2 - College Wood Farm - Mr T Dickson

EXTERNAL EMAIL: Be cautious when opening attachments or clicking links

Dear Guy

Please see attached in reply to your letter of 26th October.

I also confirm receipt of your subsequent letter to Tom Glover which I was copied into. We are discussing this within RWE and a separate response will follow in the next week.

I'd be grateful if you could let me know if Mr Dickson wishes your two letters to be treated as 'formal responses' on his behalf to the current consultation (running between 18th October and 29th November), or if he/you plan to submit further responses to the consultation? Formal consultation materials and a link to the feedback form can be accessed at www.rampion2.com/consultation.

Kind regards
V

Vaughan Weighill
Project Manager

[redacted]
mailto:[redacted]@rwe.com

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From: Guy Streeter [redacted]@savills.com>
Sent: 26 October 2022 21:20
To: Weighill, Vaughan [redacted]@rwe.com>
Cc: Glover, Tom [redacted]@rwe.com>; Nigel Abbott [redacted]@carterjonas.co.uk) [redacted]@carterjonas.co.uk>
Subject: [EXT] Rampion 2 - College Wood Farm - Mr T Dickson

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Dear Vaughan

Please see attached.

Guy Streeter MRICS FAAV
Director – RICS Registered Valuer
Rural Professional

Savills, Exchange House, Petworth GU28 0BF
Tel [redacted]
Mobile [redacted]
Email [redacted]@savills.com
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Appendix 21
Email to Tom Etherton 11.01.24

Coombes, Sean

From:	Portwain, Vicky
Sent:	11 January 2024 14:27
To:	[redacted]@LA-Law.com
Cc:	Rampion2
Subject:	Request for Physical Application Documents - Mr Dickson [LA-LAW-LEGAL.FID12564275]

Dear Tom

Many thanks for your email. Further to conversations and correspondence with Mr Dickson I sent hard copies of the following documents to his College Wood Farm address on 26/10/23 (as the most relevant documents to his concerns):

Commitment register C204

Ecology, Cultural Heritage, Water Environment and Agricultural / Soil Assessments

The Environmental Assessment Non-Technical Summary.

Document 6.2.22 Environmental Statement - Volume 2 Chapter 22 Terrestrial ecology and nature conservation. Appendix 22 of the Environmental Statement sets out ecological surveys.
Document 6.3.25 Environmental Statement - Volume 3 Chapter 25 Historic Environment
Document 6.2.26 Environmental Statement - Volume 2 Chapter 26 Water Environment
Document 6.2.20 Environmental Statement - Volume 2 Chapter 20 Soils and agriculture

Outline Code of Construction Practice and Soil Management Plan

The Outline Code of Construction Practice and Soil Management Plans set out measures to be taken to manage construction impacts.

The full suite of application documents includes all offshore related chapters which I understand is not relevant to Mr Dickson's concerns.

If you can specify any further specific relevant application chapters or documents that are relevant to your client, we can facilitate the printing of these. The documents can be found on the PINS website: Documents | Rampion 2 Offshore Wind Farm (planninginspectorate.gov.uk)

We look forward to hearing from you

Vicky Portwain

External Consultant

Land Transaction Manager
[redacted]

mailto:[redacted]@rwe.com

RWE Renewables UK

Web: www.rwe.com/rwe-renewables-uk
Twitter: @RWE_UK
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Registered Office:
RWE Renewables UK Limited: Windmill Hill Business Park, Whitehill Way, Swindon, Wiltshire SN5 6PB, Registered in England and Wales no. 03758404
RWE Renewables UK Swindon Limited: Windmill Hill Business Park, Whitehill Way, Swindon, Wiltshire SN5 6PB. Registered in England and Wales no. 02550622
RWE Renewables Management UK Limited: Windmill Hill Business Park, Whitehill Way, Swindon, Wiltshire SN5 6PB. Registered in England and Wales no. 12087808

From: Tom Etherton [redacted]@LA-Law.com>
Sent: 10 January 2024 17:36
To: Rampion2 <rampion2@rwe.com>
Cc: Rampion2 <Rampion2@planninginspectorate.gov.uk>; Matt Gilks [redacted]@LA-Law.com>
Subject: [EXT] FW: Request for Physical Application Documents - Mr Dickson [LA-LAW-LEGAL.FID12564275]

[** EXTERNAL EMAIL **]: This email originated from outside of the organization - be CAUTIOUS, particularly with links and attachments.

Dear Rampion,

Please see the correspondence below sent to the Planning Inspectorate. As explained, Mr. Dickson is unable to access the application documents electronically due to his personal circumstances and it is vital he is afforded the same access to this information as any other interested party. Please could you therefore confirm Rampion will:

(a) Provide Mr. Dickson with hard copies of the application and associated documents submitted to PINS; and
(b) Continue to send Mr. Dickson any further documentation that is submitted to PINS during the course of the examination.

Please let me know whether you require his address. If you are unable to send hard copies to Mr. Dickson, please could you kindly explain your reasons why.

Kind regards,

Tom

Tom Etherton
Solicitor
Lester Aldridge
Alleyn House 23-27 Carlton Crescent, Southampton, SO15 2EU

[redacted]
www.lesteraldridge.com

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From: Rampion2 <Rampion2@planninginspectorate.gov.uk>
Sent: 10 January 2024 16:23
To: Tom Etherton [redacted]@LA-Law.com>; Rampion2 <Rampion2@planninginspectorate.gov.uk>
Cc: Matt Gilks[redacted]@LA-Law.com>
Subject: RE: Request for Physical Application Documents - Mr Dickson [LA-LAW-LEGAL.FID12564275]

***** External email: use caution *****

Good afternoon Mr Etherton,

Thank you for your email. I am sorry to hear that your client is struggling to access the correct documentation with regards to the Rampion 2 Offshore Windfarm project. I would advise that you contact the Applicant directly for this information as they will supply Mr Dickson with any hard copies he requires.

You contact the Applicant at: rampion2@rwe.com

I hope this information is useful. If you have any further queries, please do not hesitate to contact myself or another member of the Case Team.

Many thanks,

The Planning Inspectorate

[redacted] | **Case Manager – National Infrastructure (Environment)**
The Planning Inspectorate
[redacted]

@PINSgov The Planning Inspectorate planninginspectorate.gov.uk

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DPC:76616c646f72

Please consider the environment before printing this email

From: Tom Etherton [redacted]@LA-Law.com>
Sent: 10 January 2024 15:42
To: Rampion2 <Rampion2@planninginspectorate.gov.uk>
Cc: Matt Gilks [redacted]@LA-Law.com>
Subject: Request for Physical Application Documents - Mr Dickson [LA-LAW-LEGAL.FID12564275]
Importance: High

Dear Sir/Madam,

Request for Physical Application Documents - Mr Dickson

We are writing on behalf of our client, Mr. Dickson, who is an interested party in relation to the Rampion 2 Windfarm Development Consent Order (DCO). Mr. Dickson, who is elderly, does not have access to the internet at his home, which creates a series of challenges to his ability to stay informed about the progress of the application and examination.

We understand that his local library services, that are supposed to provide public access to these documents, do not provide physical copies. Instead, these services now require individuals to access these documents via a computer within the library. Regrettably, due to his age and unfamiliarity with navigating the internet, Mr. Dickson is unable to utilise this service.

This situation has created an unfortunate barrier, preventing Mr. Dickson from fully and freely engaging with and contributing to the ongoing discourse regarding the Rampion 2 Windfarm DCO. It is essential for him to have the same access to this information as any other interested party. Considering the significant impact of the proposed development on our client, we request that either PINS or the applicant provide Mr. Dickson with a hard copy of the application and related documents. Could you please confirm that this will be arranged?

Please let us know if you require his address. We look forward to hearing from you.

Kind regards,

Tom

Tom Etherton

Solicitor

Lester Aldridge

Alleyn House 23-27 Carlton Crescent, Southampton, SO15 2EU

[redacted]

www.lesteraldridge.com

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Please take a moment to review the Planning Inspectorate's Privacy Notice which can be accessed by clicking this link.

Tom Etherton

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[redacted]

www.lesteraldridge.com

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Appendix 22
Letter to Mr Dickson 18.05.23

Mr Thomas Ralph Dickson
College Wood Farm
Spithandle Lane
Wiston
Steyning
West Sussex
BN44 3DY

Rampion 2 Project
Rampion Extension Development Ltd
Windmill Hill Business Park,
Whitehill Way
Swindon
Wiltshire
SN5 6PB

[redacted]@rwe.com

18th May 2023

Dear Mr Dickson,

Proposed Cable Route in respect of the Rampion 2 Project

I write further to the letter from Vaughan Weighill dated 28th March 2023 and our subsequent telephone discussions relating to your Kent Street land interest.

Kent Street

You submitted a representation during November 2021 objecting to the Rampion 2 cable route which is proposed to run through your land interest at Kent Street. The cable route would be the 'northern cable route' option (as presented in our summer 2021 statutory consultation– see enclosed Works Plan July 2021 42285-WOOD-PE-ON-PN-MD-0004 shown as "Works no. 12") as it exits eastwards from our proposed Oakendene substation. In our summer 2021 consultation we also consulted on a potential alternative substation location at Wineham Lane South. As you are aware, the Oakendene substation site was subsequently identified as our proposed substation site, in preference to Wineham Lane South. The cables following the northern cable route through your land interest would be required to run from our Oakendene substation at 400 kilovolts (kV) to connect to the National Grid substation at Bolney.

An alternative 'southern cable route' option, running largely to the south of your land interest, was also proposed in our summer 2021 consultation – shown on plan 42285-WOOD-PE-ON-PN-MD-004 as "Works no. 6". The proposed 'southern cable route' was principally based on cables arriving from the south from the wind farm and then heading directly east towards our Wineham Lane South option.

You have previously indicated on many occasions that your key concern with regard to the 'northern cable route' was its effect on your Queen's Green Canopy proposal (QGC), which you say has resulted in the Woodland Trust recently confirming to you in writing that they would not qualify your woodland under the QQC. In light of this, you confirmed that you would be agreeable in principle to our southern cable route, as it would not sever the woodland scheme in the same manner.

Further to your communication of the above, Rampion 2 re-visited the potential for using the southern cable route option (as consulted upon in summer 2021) specifically for

...

cables running from the Oakendene substation towards Bolney National Grid substation. A combination of the engineering requirements and policy constraint for a small Site of Special Scientific Interest (SSSI) immediately to the west of Kent Street, reconfirmed the conclusion that the southern route option would involve greater environmental impacts than for the northern route and that there was no justification to progress this route.

Further modifications to the southern cable route were also explored by the Rampion 2 team, to establish if a route with comparable or only marginally increased impacts to the 'northern cable route' could be identified which would be acceptable both to Rampion 2, having regard to objectively assessed impacts, and to you, and would therefore enable us to reach an agreement on the land rights required for Rampion 2.

Through this exercise, a further modified route immediately to the north of the southern cable route was identified as shown cross hatched green and orange on the enclosed plan ref 42285-WOOD-CO-ON-PN-MD-0020, which was hand delivered to your address on 7th April 2023. We discussed this plan further and you stated that, as the cable routeing went through the centre of the field, it would have a sterilising impact on your farming and as such you considered it unacceptable. You requested that Rampion 2 consider:

1) the movement of the cable route towards the southern boundary of the field and
2) an extension of the proposed trenchless cable installation (by Horizontal Directional Drill (HDD)), eastwards into the next field. This would extend the drilled section further into the open cut trenched section (shown cross hatched green to the east on the enclosed plan).

The above requested changes were considered by the Rampion 2 team. However, we concluded that such a change was not justified on balance. This was due to it having greater potential impacts (including the amenity of nearby residents, effects on trees and vegetation) and significant additional cost,

We subsequently spoke on the telephone in light of the above and you indicated that the proposed cable route shown on plan 42285-WOOD-CO-ON-PN-MD-0020 would have a greater impact on your farming than the 'southern route'. You then asked for the cable to be located as far south as possible in the northern cable route corridor (as consulted on in summer 2021). I explained that there are tree and hedge buffers which need to be maintained which prevent the siting of the cable immediately adjacent to the field boundary, but that we would seek, in our final design, to site the cables as far south as possible within the DCO application boundary to reduce interference with any tree planting carried out by you so far as practicable.

I confirm that, further to the above, the northern cable route as shown on the enclosed plan will be included in our DCO red line boundary for our consent application. We remain of the view that, with ongoing planning and mutual co-operation, our proposals and the tree planting regime you have started to implement can both be delivered. Our position is based on our own analysis and publicly available information from the Woodland Trust (who administer the QGC "certification") regarding bio-diverse mixed woodlands.

I understand from our conversations that you have now planted some of the land in the proposed Rampion 2 northern cable route, but that you believe that you have left some space for the Rampion 2 cable corridor. As previously requested, please do send either Carter Jonas or I the plan for your planting scheme so that we can check the extent to which it is compatible with the cable routeing that we intend to submit as per the attached plan. We will commit to try and reduce impacts where possible through detailed siting within the DCO red line boundary. We would propose to secure any such route in a

voluntary agreement and in this regard Carter Jonas will shortly be forwarding Heads of Terms for your consideration.

Please do contact me if you would like to discuss this further at this stage.

Vicky Portwain
Land Transaction Manager, Rampion 2

Enc. Plan ref: 42225-WOOD-CO-ON-PN-MD-0020
42285-WOOD-PE-ON-PN-MD-0004

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Appendix 23
Letter to Mr Baird 03.05.23

James Baird
Home Farm
The Street
Clymping
Littlehampton
BN17 5RQ

Rampion 2 Project
Rampion Extension Development Ltd
Windmill Hill Business Park,
Whitehill Way
Swindon
Wiltshire
SN5 6PB

[Note new registered office]

[redacted].extern@rwe.com

3rd[rd] May 2023

Dear Mr Baird,

Proposed Cable Route in respect of Rampion 2 Project

I write with reference to the visit by my colleagues Rob Gully (Rampion 2 Consents Manager), Mark Henry (Rampion 2 Engineer) and Nigel Abbott (Carter Jonas Land Agent) to Church Farm, Clymping on 15th March 2023.

I understand that the meeting on 15th March touched upon a number of matters, and I would like to take this opportunity to provide you with further information on these points:

1. The Proposed Rampion 2 Construction Compound

During the meeting on 15th March, you explained your preference that we site our construction compound at a location to the north of the location which we have identified.

You have previously suggested the use of this location, and we have considered it as one of a number of alternative locations in the area. However, our conclusion was that our choice of locations was constrained largely by the likelihood of flooding in this area.

Over half of the compound area that you proposed is situated within Flood Zones 2 and 3. It is therefore notably less preferable than our chosen compound location, due to this significant flood zone interaction (having a tidal flood risk across roughly half of the compound, and a fluvial risk across a third). We would therefore be required to demonstrate that other compound location options at lower flood risk are not feasible (but this is not the case, and so we are not able to demonstrate this). Please see Fig 1 below which shows this and a note at Appendix 2 from our Environmental Assessment team with regard to the Environment Agency flood data used. There are additional constraints to the north such as the scheduled monument and Archaeological Notification Area which also require to be taken into account.

...

You also asked about the extent of our expected use of our proposed compound area. Having consulted within the Rampion 2 team, I can report that it is likely that we would want to use the full area of the compound for the whole of the cable route construction period (which we expect to last for 3 years). We expect that this compound will be one of three used along the cable route, and that it would serve the landfall works and between 30% and 40% of the cable route.

2. Soil Storage

At the meeting on 15th March, you expressed concern about the movement and storage of soil and the "arisings" from our drilling work.

We would intend to move only the haul road arisings and potentially the topsoil from the corridor, to be stored in the compound away from the flood zone, as these materials will need to be stored for the duration of the construction works. The majority of the soil excavated from the trenches would be stored locally, and then backfilled into the trenches, as part of the trench excavation and duct installation process.

The "Rampion 2 Outline Code of Construction Practice" (which is available at the Rampion 2 website https://rampion2.com/wp-content/uploads/2021/07/Rampion-2-Outline-Code-of-Construction-Practice-.pdf) provides further detail of our proposed working methods:

Section 5.4 "Soils and agriculture" sets out the commitments and processes. Within Table 5.3, Point C-11 explains:

> *During construction topsoil and subsoil will be stored within the temporary working corridor of the onshore cable. The topsoil and subsoil will be stored in line with Defra 2009 Construction Code of Practice for the Sustainable Use of Soils on Construction Sites PB13298, including guidance on utilising separate stockpiles and giving due consideration to adverse weather conditions. Any suspected or confirmed contaminated soils will be separated, contained and tested before removed.*

The following Sections also explain our proposed methods:

5.4.5 Use of the Outline Materials Management Plan *(MMP), in conjunction with the Outline* Soil Management Plan *(SMP), will ensure that excavated materials identified for reuse are stored appropriately to protect them from damage or cross contamination and that these materials (including soils) have a defined end use to avoid them becoming waste.*

5.4.6 Any material which is not suitable for use or which is surplus will be disposed offsite in line with the waste management and measures outlined in Section 4.9.

5.4.7 Further soils and agriculture management measures will be considered and included in the final updated Outline COCP at DCO Application where relevant.

Section 5.8 Ground conditions (including contamination) refers to processes to deal with contamination i.e.:

C-15 Contamination if found will be subject to appropriate risk assessment and if necessary, either removed, treated and/or mitigated as part of the Proposed Development.

C-19 The onshore cable will be constructed in discrete sections. The trenches will be excavated, the cable ducts will be laid, the trenches backfilled and the reinstatement process commenced in as short a timeframe as practicable. At regular intervals (typically 600m –1,000m) along the route joint bays/pits will be installed to enable the cable installation and connection process.

C-71 RED will ensure that the land used for the Proposed Development is suitable for the proposed use with respect to the potential for soil and groundwater contamination and, where necessary, risk-based remediation is undertaken in line with Environment Agency (2020) guidance (Land Contamination: Risk Management). The precise design of any remediation strategy will be confirmed in the detailed design after consent has been granted.

If you enter into a land agreement with Rampion 2, there would be a direct contractual commitment by Rampion 2 to ensure that it causes as little damage and disturbance to your land as reasonably possible. Reasonable compensation would be payable for loss and damage in accordance with the terms of the land agreement. To explain the liability that (in principle and subject to the terms of the land agreement) Rampion 2 would intend to take for contamination damage and loss issues that might arise during our installation work: Rampion 2 would be liable for costs associated with harm or losses from contamination or of the release of contamination, where this is the result of our work on your land. We would appreciate the opportunity to discuss this further with you and in the context of land agreement HOTs which Carter Jonas will be issuing to you at the same time as this letter.

3. Access Routes

As I understand was discussed at your meeting and as per the updated works plans sent to you at the end of April, Rampion2 is proposing the following access routes through land in your ownership between Ferry Road and the River Arun:

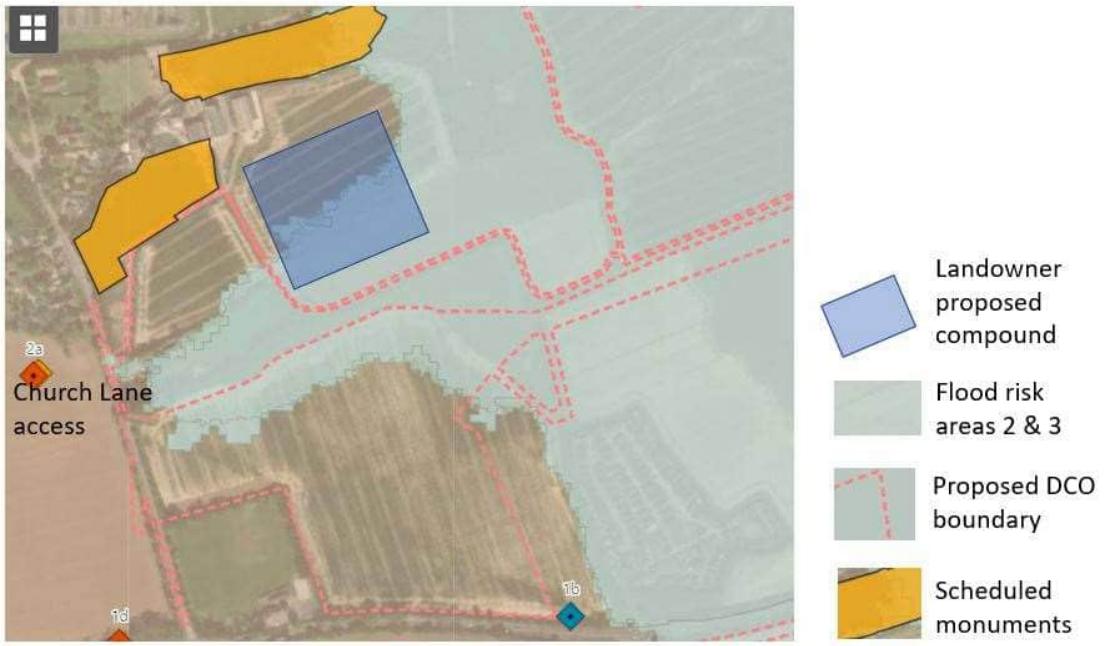
1) Haul road along the cable route: temporary construction
2) Construction access road from Church Street to the proposed compound and on to the cable route
3) Operational access to access land to the north of Ferry Road
4) Operational access to land south of the River Arun

Please do contact me or Carter Jonas if you would like to discuss these matters further.
Yours sincerely,

Vicky Portwain
Land Transaction Manager Rampion 2

Figure 1 – Previously considered and dismissed plan of Compound location proposed by Mr Baird and flood risk zones 2 and 3

Figure 1 – Compound proposed by Mr Baird



Appendix 1

Comments, Questions and Responses to Mr Baird email dated 17th March 2023

1) The owners and Hallam Land have both undertaken time and expense to bring this field forward for development. RWE's timescales are incompatible with the development proposals and the progression of the local plan, made worse because RWE's occupation will prevent surveys from being undertaken in advance of a planning application, resulting in further delays.
We have not seen a programme for Hallam land development proposals, so it is difficult to comment on the compatibility of development proposals. However we note that the land is not allocated for development or subject to a planning application and as such is not demonstrated short term development land. All of the proposed Rampion2 works are temporary (except for retaining a permanent access through for light vehicles). Further there are potential opportunities for both development proposals to work together e.g. the structural planting you have told us about and we would like to continue these discussions. Further options such as leaving in compounds (subject to consents etc) can also be discussed. With regard to surveys, discussions can take place with regard to potential access to the compound in the event that Hallam need to secure planning application surveys for medium- long term development proposals. If a broad development programme can be forwarded or discussed informally we can give the matter further consideration.

2) *There are risks associated with accidental contamination from say fuel spillage, or the leaching of natural contaminants from the storage of soil. The landowner's*

preference is to eliminate these risks by locating the compound on alternative fields.
Please see the main cover letter.

-Where the use of this land is genuinely unavoidable (I.e negotiations with the EA are exhausted) then a baseline contamination survey will be insisted by the landowner. This is entirely reasonable for development land. We would be prepared to pick this up in discussions on the Heads of Terms (see cover letter)

-The cable route will damage an environmental feature (the Countryside Stewardship field corner) and no attempt has been made to avoid it. This has been taken into account in the Preliminary Environmental Assessment work and impacts have been minimised through the narrowing of the access in this location. The remediation measures proposed will ensure that the environmental feature is not compromised in the medium to long term.

The landowners objected to the compound location in 2021 and again in 2022. To date, we have not seen any compelling evidence to suggest that RWE have properly investigated alternative locations that would be compatible with the landowners concerns and wishes.

In light of the above, and the magnitude of these concerns, I regret that our Client wishes to maintain their objection to the scheme. I note that the standard commercial Heads of Terms prevent Claimants from objecting to the scheme and I am therefore instructed not to engage with RWE's agents on the commercial terms until the above concerns have been satisfied. We would welcome the opportunity to discuss matters further and how concerns might be addressed through our ongoing environmental work and also in the context of the key commercial terms and land agreements.

Appendix 2:

The flood data referred to is based on the Environment Agency (EA) owned flood models, which provide the best and most up to date estimate of flood risk. In this region, the model outputs are from a 2010 modelling study undertaken for the EA, which considered fluvial and tidal sources of flood risk and allowances for climate change and sea level rise. These models are updated periodically, and despite the age of this data, it remains the best indication of flood risk for the area and therefore there is no immediate reason to have any major uncertainty in the mapping. The outputs from this modelling study make up the formal EA flood zones 2 & 3 on the Lower Arun, shown within the formal flood map for planning and would also be mapped within the Arun DC SFRA.

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Appendix 24
Letter to Mr Dickson 24.05.23

Rampion 2 WIND FARM

RWE

Mr Thomas Ralph Dickson
College Wood Farm
Spithandle Lane
Wiston
Steyning
West Sussex
BN44 3DY

Rampion 2 Project
Rampion Extension Development Ltd
Windmill Hill Business Park,
Whitehill Way
Swindon
Wiltshire
SN5 6PB

[Note new registered office]

[redacted]@rwe.com

24th May 2023

Dear Mr Dickson,

College Wood Farm: Proposed Cable Route in respect of Rampion 2 Project

I write with reference to your letter dated 18th April 2023, with your enclosed plan, and our telephone subsequent telephone conversation related to the same.

Your letter covered the following:

1) cable routeing – woodland and tree constraints and buffer distances used from ancient woodland;
2) cable routeing – proximity to Grade II Listed building (College Wood Farm);
3) potential for a trenchless crossing under the access road to College Wood farm;
4) farming, animal welfare, and health and safety concerns about our proposal
5) prospective development proposals at College Wood farm
6) comments about how you feel you have been treated by Rampion 2.

1. Cable Routeing – Woodland/ tree constraints

My letter dated 14th April 2023 set out the rationale for our cable route decision and the constraints related to the cable routeing through your landholding.

The constraints included avoiding crossing additional treelines, protecting trees and tree roots and ancient woodland. With regard to ancient woodland I confirmed that a 25m buffer is applied.

Notwithstanding the above, I also noted in my letter of 14th April that the project is seeking to use a cable routeing that is economic and efficient and that the additional cable length required by the routeing of the cable northward along the field boundary would need to be justified on environmental or engineering grounds (which the Rampion2 team do not believe it to be). The potential for moving the route closer to the northern tree line has already been considered and rejected by the Rampion 2 team for the reasons previously given. Your proposed route on the plan accompanying

...

your letter, which shows a route 15m from the tree line to the north, does not therefore change the previous conclusion reached by the Rampion 2 team.

Your letter states that Natural England specify a 15m buffer from development to ancient woodland. The guidance (https://www.gov.uk/guidance/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions) states that a minimum 15m buffer should be used, and in this case, 25m has been deemed appropriate further to discussions with a group of statutory consultees, which included West Sussex County Council and Natural England. West Sussex County Council raised concerns that 15m would not be an adequate distance and therefore 25m was proposed to ensure that impacts from the project, such as surface water run-off and dust, will be reduced. This scheme-wide commitment was published publicly in our Commitments Register (commitment number C-204) and will be secured as an obligation on us through the consenting process.

The Commitments Register is available at:
https://rampion2.com/wp-content/uploads/2022/10/PEIR-SIR-Appendix-F-Commitments-Register-PDF.pdf

or please do let me know if you would like a hard copy sent in the post.

As such, all ancient woodland will be retained with a stand-off of a minimum of 25m from any surface construction works along the length of the cable route. Notwithstanding this commitment, the ultimate alignment of the cable route remains a balance of considerations and factors, in addition to any specific constraints.

2. Cable Routeing – Listed Building Considerations

Our environmental impact assessment process has considered the impact of the project on the Grade II Listed College Wood Farm and concluded that there is the potential for temporary significant heritage effects on the setting of the property during the construction period which are considered acceptable. Whilst moving the route northwards would increase the distance from the Grade II listed College Wood Farm, their assessment is that there would only be a slight reduction in impacts due to the open nature of the land.

3. Trenchless crossing under your access road

As explained in my letter of 14th April, it is not proposed to drill under the access road to College Wood farm by using a trenchless installation technique. Rampion 2's construction management approach means that trenchless installation is not proposed under private access roads with comparably limited traffic flows along the Rampion 2 cable route. We have not identified any environmental or engineering rationale for addressing this location in a different manner. Surface water flooding issues in the adjacent land, as referenced in your site meeting with my colleagues on 15th March 2023, can be managed without the need for trenchless installation.

4. Farming, animal welfare, health and safety

You referred to previous conversations and correspondence referring to how you farm differently at the meeting with my colleagues at College Wood farm on 15th March 2023. I have sight of College Wood farm site visit notes from 22nd June 2021 stating that you were concerned that the soil type on your land (which is used for cattle grazing) is not usually broken, and you also expressed concern that the presence of cable construction works on your land would make it difficult to farm and move your cattle. In addition I have

a copy of the letter dated 10th February 2021 from Westpoint Farm vets which states that due to the splitting of fields by the proposed cable route, cattle with calves would be grazing either side of the cable route and that animal injury risks could arise as a result of cattle and calves potentially gaining access to the cable trench area. Concerns regarding your handling of the cattle across the cable construction corridor have also been raised by you on our telephone conversations.

I stated in my letter that specific 'on the ground' measures such as suitable gates and fencing can be discussed and refined with you before construction commences. However, this does not allay your concerns and you remain of the view that it will be unsafe for you to keep cattle in the fields, meaning that over 60% of the working farm will be sterilised.

Carter Jonas and our engineers have identified a range of potential mitigation options such as gated corridors and temporary water bowsers, which can be provided so as not to cut off any water troughs/ supplies to the cattle in fields either side of the construction corridor. Furthermore, we can discuss the possibility of funding a stockperson to manage this when required. An Accommodation Works schedule, incorporating notification and communication procedures, ensuring you are aware of the nature and timing of activities and work, can be agreed prior to construction. Our engineers can facilitate a regular daily communication with you during the works.

With regard to the soil type on your land not usually being broken I confirm that a photographic record of condition can be taken prior to the works and a commitment can be made from RWE that the land will be restored to this condition with specific soil restoration and planting requirements agreed with you.

5. Comments about how you feel you have been treated by Rampion 2

You explain in your letter that you do not feel that Rampion2 has given consideration to your 'circumstances and disabilities'. You have previously identified verbally to my colleagues that your age is a factor in how you specifically farm your cattle. For the avoidance of doubt, I would therefore be grateful if you could please clarify any further, where you are comfortable to do so, what those circumstances and disabilities are. Furthermore, I would be grateful if you could set out your concerns about how the Rampion2 proposals may specifically impact upon them. We have previously discussed your concern about being able to continue running the farm single-handedly, and we have explained the measures that could be adopted, such as those referred to in paragraph 4. However, I do not believe you have expressly raised other circumstances or disabilities with our team. Please provide any response in writing to ensure we have the full information before considering whether any further reasonable mitigation measures may be appropriate.

I am sorry that you feel that Rampion 2 has not dealt with matters in an acceptable way. Throughout the consultation and engagement process we have sought to address you and other affected landowners in a fair and consistent manner. We have also responded to specific requests such as providing printed copies of documents.

As set out in my previous letter, we are unable to adopt your preferred route at College Wood Farm. As my colleagues have set out with you in recent meetings, cable routeing is a balanced decision taking into account many factors, meaning that we are not able to accept all requested alterations or mitigation measures.

Notwithstanding this, I am obviously concerned that you consider that you have been bullied and discriminated against. In the circumstances I have set out the details below of the appropriate person from Rampion 2's associated parent company, RWE, with whom you may raise a formal complaint should you wish to do so.

Jodie Gunn: Head of Onshore Consents for UK Offshore Development:

Jodie Gunn
C/O Adam Blackford
RWE Renewables
Windmill Hill Business Park
Whitehill Way
Swindon
SN1 6PB

[redacted]@rwe.com

6. Development Plans

We consider the weight that should be given to development proposals, based on their status and level of advancement in the planning system. I have checked the Horsham District Council website for new planning applications at College Wood Farm but cannot identify a new or recent planning application at this address. Please can you confirm if these are your development plans or another party's and provide details. Without plans and/or the proposed programme for either the making of an application or the subsequent development programme, we cannot assess the potential effect of Rampion 2. My letter of 14th April requested that any updates on progress on the application be reported and forwarded onto us but we are yet to receive any information.

7. Summary of latest position

Our conclusion remains that the movement of the cable corridor further north is not justified for the same reasons set out in my letter of 14th April.

We believe it would be constructive to arrange a further site visit by our engineers to understand your farm management and requirements in more detail and to discuss mitigation measures that could be adopted during construction on our chosen route. If you are open to this I would be grateful if you would provide some suitable dates for consideration.

Yours sincerely,

Vicky Portwain
Land Transaction Manager
Rampion 2

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Appendix 25
Letter to G Streeter 19.08.22

Mr Guy Streeter
Savills
Exchange House
Petworth
West Sussex
GU28 0BF

Rampion 2 Project
Rampion Extension Development Ltd

c/o RWE Renewables
Greenwood House
Westwood Way
Westwood Business Park
Coventry
CV4 8PB

[redacted]@rwe.com

[Sent by email]

19th August 2022

Dear Guy,

Proposed Cable Route in respect of Rampion 2 Project

I write in reference to the parcels of land owned by Mr Dickson at College Wood Farm and Kent Street and the land registered in the name of Green Properties (Kent and Sussex) Limited of which we understand Mr Dickson is a Director of the company (and sole representative in respect of discussions regarding the company land interest).

Mr Dickson (Title No. WSX244867 & WSX373211) "College Wood Farm"

As you are aware, we attended a meeting on 8th April 2022 at College Wood Farm to explain our position on our cable installation approach. However, the meeting was curtailed at Mr Dickson's request, once he became aware that we were not proposing to accede to his request for the cable to be installed by trenchless means across the entirety of his affected landholding. Furthermore, you did not feel it would be appropriate (given that we were maintain our proposal for open cut trenching) to undertake the further meeting that we had arranged for 25th May 2022.

That said, our agent, Nigel Abbott of Carter Jonas did arrange a meeting attended by yourself, Freya Rawlings (Savills), Nigel Abbott (Carter Jonas) and Mr Dickson on 15th June 2022. Following the meeting, as agreed, you have kindly provided extracts / partial information of an ecology survey report undertaken at College Wood Farm which was received on 19th July 2022 and which we have subsequently considered.

I hope it will be of assistance if I explain here our position regarding Mr Dickson's request for the use of Horizontal Directional Drilling (HDD), a trenchless installation technique, instead of open cut trenching for the route across College Wood Farm.

...

In addition to the partial ecology report you have provided, Mr Dickson's request for cable installation by HDD has been considered by the Rampion 2 team engineering and environmental teams. Our conclusion remains that HDD would not be justified in this instance for the reasons listed below:

a) HDD is a technique used by exception, where there are specific constraints or considerations which would normally make trenched installation unfeasible; such as railways, rivers, major roads and in some cases protected environmental features.

b) Once complete, our cable route will form part of the national electricity transmission network. Policy and legislation reflects that electricity networks are developed in an "economic and efficient" manner. In this case, as in general for underground electricity cable routes, the crossing of current open pasture land at College Wood Farm would not justify the additional cost of a trenchless installation, given the temporary nature and limited effects (as assessed through our Environmental Impact Assessment process) of our open cut construction and subsequent reinstatement works. This includes consideration of the ecological status of the land set out in (c) below.

c) The survey information provided by Mr Dickson's ecological consultant has been carefully reviewed by our ecological team, however it is difficult to make a meaningful comparison as the areas of survey differed (e.g. landholding vs. cable corridor).Therefore, it is unknown which conclusions detailed in the supplied excerpts refer to the alignment of the potential cable corridor. However, from the description of grassland provided (i.e. the species listed as dominant), it is apparent that the area has been agriculturally improved.

   The difference in the conclusions drawn between the surveys is one of the degree of agricultural improvement that has occurred. It is noted that the grassland described in the excerpt of the survey report provided does not constitute a habitat of principal importance and the area is not shown on the Priority Habitat Inventory as the non-priority habitat "good quality semi-improved grassland". Therefore, regardless of whether this area is considered to be semi-improved or improved grassland, its importance from a legislative or planning policy perspective is not such that it would justify the use of trenchless installation. It should be noted that other habitats of similar composition across the route are also proposed for open cut installation of cable ducts.

d) The hedgerows within the landholding (at least on the alignment of the cable corridor) have been identified as supporting native species. However, the sections surveyed were not judged to be "important" with respect to the Hedgerows Regulations 1997. All native hedgerows are habitats of principal importance, and therefore specific mitigation has

been devised to minimise temporary losses. This method will reduce losses to each hedgerow crossed by the cables to a maximum of 14m (in up to 5 notches). It is not possible to avoid all hedgerows for a linear project mostly passing through a farmed landscape. However, the approach to be taken is in keeping with the best practice currently available for linear projects.

For these reasons, the Rampion 2 team has concluded that open trenching rather than HDD (or other trenchless crossing methods) is a justifiable method for installing the cables at College Wood Fam.

I understand Mr Dickson's disappointment and frustration that we do not consider it appropriate to cross his land by HDD, but I can assure you that we have had due regard to his request and given it significant consideration.

I hope that the above explanation of our position is helpful, and we and our agent remain willing to meet with yourself and Mr Dickson if you wish.

Mr Dickson (Title No. WSX397379) & Green Properties (Kent and Sussex) Limited (Title No. WSX145617 & WSX227694) "Kent Street"

Thank you for your letter of 26th May 2022, regarding Mr Dickson's successful entry of the entirety of the land that he owns at Kent Street into the Queen's Green Canopy, as a tribute to Her Majesty The Queen to celebrate her Platinum Jubilee.

Mr Dickson's previous advisors did explain (22nd November 2021) that he had plans for tree planting and rewilding at Mr Dickson's and Green Properties (Kent and Sussex) Limited land at Kent Street, in conjunction with the Queen's Green Canopy initiative; and that this was designed to become a local community project with open public access.

At that time (November 2021), we requested details of these tree planting and rewilding plans, so that we could consider ways to work alongside them. Perhaps, for example, by using the cable corridor for public walkways, or for access tracks that would also be helpful for tree planting. Unfortunately, we have not received any response to our request for information on the planting proposals. Neither was any reference made to these planting proposals in response to the Rampion 2 Statutory Consultation process.

Notwithstanding this, it remains the case that we would be keen to understand and explore whether we could install our cables in harmony with Mr Dickson's proposals for his land. Therefore, I would be grateful if you could please forward to me details of the planting proposals, including details of the locations and types of the proposed trees and any associated infrastructure, and details of the expected schedule for planting and installation.

It is our intention that the cables would cross underneath Kent Street and onto the Green Properties landholding, before emerging above ground and continuing by open trench method along the route indicated in the Works Plans that accompanied our Statutory Consultation documents last year.

Once we have received this information, then I suggest that we schedule a meeting at site a few weeks later in order to discuss the planting and cable proposals.

Please note I am now on leave until Monday 5th September, so any queries in the meantime please direct these via Nigel Abbot at Carter Jonas.

Yours sincerely

Vaughan Weighill
Project Manager Rampion 2, RWE

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Appendix 26
Letter to Mr Dickson 14.05.23

Mr Thomas Ralph Dickson
College Wood Farm
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Rampion Extension Development Ltd
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Wiltshire
SN5 6PB

[Note new registered office]

[redacted]@rwe.com

14th April 2023

Dear Mr Dickson,

College Wood Farm: Proposed Cable Route in respect of Rampion 2 Project

I write with reference to our recent phone conversations, and to the visit by my colleagues Rob Gully (Rampion 2 Consents Manager), Mark Henry (Rampion 2 Engineer) and Nigel Abbott (Carter Jonas Land Agent) to College Wood Farm on 15th March 2023.

I understand that the meeting on 15th March touched upon a number of matters related to College Wood Farm, and we have subsequently discussed your farming and other concerns and our constraints such as the ancient woodland. I would like to take this opportunity to provide you with further information on these points:

1. Cable Routeing and Constraints

You have mentioned that land along our proposed cable corridor at College Wood Farm is prone to water-logging, and we have been sent photographs that illustrate this point.

In deciding our cable route, we consider various environmental and engineering factors. The waterlogging of ground at College Wood Farm will present challenges that will need to be addressed in our cable installation methodology, and may require some particular drainage or land de-watering techniques. However, we are aware that these conditions are likely to be encountered in many locations along the Rampion 2 cable route, and methods for dealing with wet ground are well-established in cable installation. Rampion 2 engineers are therefore satisfied that this constraint can be managed.

The width of our current, proposed red line DCO boundary provides us with some flexibility to avoid some wet areas of ground. However, were we to move the construction corridor further north of the current proposed red line DCO boundary (towards the field boundaries) then we would encounter other issues:

- We would cross additional treelines.

...

- We would need to protect the root protection zones of trees, meaning that the works would need to be kept a minimum of 10m-15m away from the (non ancient) woodland areas on the property boundary.
- Where the property boundaries comprise ancient woodland, a buffer of 25m is required to be met and it is noted that much of the woodland to the north is designated ancient woodland and would be subject to associated protective planning policies. These areas are marked on the enclosed plan 42285- WOOD-CO-ON-PN-MD-0022
- The project is required to use a cable routeing that is economic and efficient. Therefore, the additional cable length required by the routeing of the cable northward along the field boundary would need to be justified on environmental or engineering grounds (which the Rampion2 team do not believe it to be).

Notwithstanding the above constraints, we have sought to address the points you have raised and considered the possibility of moving the cable route northwards but remaining within the red line DCO boundary. The attached plan reference 42285-WOOD-CO-ON-PN-MD-0022 shows:
- Red line DCO boundary (as published for consultation in Oct/ November 2022) -
- potential indicative 40m cable routeing hatched in green avoiding tree belt
- ancient woodland areas (minimum distance 39m from DCO red line at the closest point)

This has been prepared to show how we may be able to locate the final cable alignment within the red line DCO boundary so as to push it as far north as practicable.

We cannot fix the precise cable alignment at this stage, and we propose to progress the full extent of the DCO red line in order that maximum flexibility to install the cable is maintained as discussed on the phone. We will seek to deliver the approximate alignment shown hatched green on the plan if reasonably feasible and practical prior to construction. Please do contact me if you would like to discuss this further.

2. Concerns raised in letter from Westpoint Farm Vets (of 10th February 2021)

In their letter of 10th February 2021, Westpoint Farm Vets raised the concern that livestock could be injured if they gain access to cable trenches, and commented that, "This risk could be greatly reduced were the cable route to instead follow the field boundaries, thus requiring only one line of fencing."

Our cable installation works would involve the installation of appropriate fencing (such as stock-proof fencing) along the cable route, in order to avoid cattle or other farm animals gaining access to the trenches or the construction works. This approach of fencing-off the construction working "corridor" is typical for cable installation works. Detailed access arrangements such as appropriate gates would be discussed with you.

3. Effect of cable installation on farming practices

You have explained your concern that our cable proposals (and severance of your estate) would destroy your farming business, which is based on your single-handed running of your farm and also, that you believe that the operating of crossing points for cattle and sheep is not viable. You have requested that we keep our cable route to your field boundaries; allowing cattle to be farmed to the south, while hay making activities continue separately to the north (with no crossing of the cable route required).

For the reasons explained in Point 1 above, it is our conclusion that the movement of the cable corridor to the field boundaries is not appropriate. However, we would seek to work

with you in order to minimise impacts through detailed siting within the DCO red line boundary and if appropriate locate and operate any crossing points over the construction corridor at appropriate locations, to enable you to move cattle back and forth as you need to or discuss alternative arrangements should you decide (as discussed) that you would not keep cattle in the northern field. Carter Jonas will be contacting you to obtain further information on your farming matters raised.

4. Crossing of driveway

Where our cables cross rivers and major roads, or other significant obstacles, we would install them by "trenchless" methods such as Horizontal Directional Drilling (HDD). This involves further land take for HDD entry and exit pits and further assessment work is required due to the more extensive nature of the works. In the case of the driveway at College Wood Farm, we propose to perform the crossing by open-cut trenching. We expect that the crossing of the drive would take less than one week and that during this time a suitable local temporary diversion route would be established. A passing gateway (or similar) system would be put in-place for a longer period, to enable construction traffic to safely cross the driveway (and bridleway) at this point. The driveway would be returned to as good or better condition shortly after the cables have been installed, and when all works are complete and removed a final inspection would be carried out to confirm that reinstatement is acceptable.

5. Danger to horse riders

The presence of horse riders on your property has been highlighted to us. We would put in-place appropriate measures to facilitate the ongoing use of the bridleway: including fencing along the construction corridor, and appropriately located and operated crossing points over the corridor.

6. Access gate on driveway

You have pointed-out that the gate across your driveway is often locked, and perhaps you are concerned that were it to be open and available for regular access then the security of your property might be compromised.

I confirm that the College Wood Farm driveway would be used only for access during the operational life of the cables for any required checks or maintenance. We expect that this "operational" access would be required on an infrequent basis: perhaps a few times a year and in most cases by prior arrangement (in the same way that utility companies already perhaps gain occasional access to your land), save in the event of an emergency.

7. Planning applications

You have explained that you are intending to construct a number of houses on your property at College Wood Farm

Whilst we understand that you have not yet submitted a planning application for this development, we will be happy to discuss your plans with you as they progress to seek to ensure compatibility of the proposals.

8. Biodiversity reports

With a letter of 19th July 2022, we received an ecological report and commentary regarding College Wood Farm.

We passed this information to our project ecologists, who reviewed it. Their conclusion was that the information it provided is useful and is not inconsistent with their baseline ecological assessment of College Wood Farm, but it does not change the approach that should be taken to construction there.

Yours sincerely,

Vicky Portwain
Land Transaction Manager
Rampion 2

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Appendix 27
Letter to Mr Dickson 11.01.23

Mr Thomas Ralph Dickson
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Windmill Hill Business Park,
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SN5 6PB

[Note new registered office]

[redacted]@rwe.com

11th January 2023

Dear Mr Dickson,

College Wood Farm: Proposed Cable Route in respect of Rampion 2 Project

I am writing with regard to your letter dated 31/ 7/23 which I collected from College Wood Farm. I have not responded sooner as I was aware that you were preparing your representations to PINS and I did not want to confuse matters in relation to your submissions.

With regard to your letter however, I would like to respond to the points raised. I arranged for hard copies of the relevant Environmental Statement documents to be couriered to you directly at College Wood Farm on 26/10/23. Whilst I am aware you have submitted a relevant representation I respond to your points raised specifically in your letter below.

Plan of cable routes considered with lengths and vegetation

Please find attached the aerial photograph with cable routes that have been considered by Rampion 2 marked on (drawing 42285-WOOD-CO-ON-PN-MD-0031). This photo shows the vegetation considered through the cable route assessment. The ancient woodland has already been identified in orange hatching and all other tree belts that have influenced the design are shown on the photo. The plan also shows measurements of the different routes considered as requested.

As previously discussed the final route choices is a balanced judgement taking into account all relevant environmental and engineering considerations. In this case changing the route and lengthening it was not justified on engineering and environmental grounds as it has been elsewhere along the route.

Animal Welfare

In your letter you say I have ignored the issue of animal welfare outlined in the Westpoint letter and my suggestion is inappropriate and impractical. In my letter dated 24th May I outline the range of mitigation options put forward by Carter Jonas and Rampion 2 engineers and I would be grateful if you could outline the reasons why these are inappropriate/ practical in terms of animal welfare so that these reasons can be taken into consideration.

...

Health and Safety

You confirm your concerns relating to moving large numbers of cattle stock regularly through crossing points and refer to stockman injuries (1 stockman killed every 10 weeks in the period to 2022). You also state that Carter Jonas did not contact to obtain further information. Carter Jonas engagement records show that you spoke with Nigel Abbott from Carter Jonas on 26th April 2023 when you discussed your concerns regarding moving the cattle through the access points. We understand however that the conversation was steered by you back to the issues you have with the cable route and overall sterilisation of land impacts rather than detail on where the animals are moved from and to, potential for alternative grazing and potential stockman assistance.

Reinstatement of "Double width" remnants of an ancient woodland hedgerow

You state that Rampion 2 has ignored the ecological information provided by you.
The letter addressed to your agent at the time Guy Streeter from Vaughan Weighill dated 19th August 2022 sets out Rampion 2's response to the ecological report forwarded to the team (copy attached to this letter). With regard to the hedgerows impacted by the Rampion 2 cable the letter states that the hedgerows within the landholding (at least on the alignment of the cable corridor) have been identified as supporting native species. However, the sections surveyed were not judged to be "important" with respect to the Hedgerows Regulations 1997 and the hedgerow marked on Guy Streeter's plan is not ancient woodland. All native hedgerows are habitats of principal importance, and therefore specific mitigation involving the narrowing of the cable crossing to 14 m (in up to 5 notches) has been devised to minimise temporary losses. It is not possible to avoid all hedgerows for a linear project mostly passing through a farmed landscape. However, the approach to be taken is in keeping with the best practice currently available for linear projects.

The plan taken from the NE website data identifies the ancient woodland information that we have taken into consideration. Information relating to this was provided in my letters dated 14th April 2024 and 24th May 2023.

Traffic Movement and Access

You raise concerns about the number of vehicles and consideration for emergency access for humans and animals. Emergency access will be provided – and discussions with Rampion 2 engineers can help explain this and discuss scenarios with you.

Kent Street

The reason for leaving the plan directly in your letter box (as agreed with you on a phone call) was to get it to you as speedily as possible in my attempts to engage and secure an agreed cable siting position before the Rampion 2 project design freeze. I also said that I would call you to go through the plan or I would be happy to meet on site.

This attempt to further engage and to address your concerns were made notwithstanding that the consultation period ended in 2022 and the cable route had been largely fixed. I had talked through the plan with you on the phone on 7th April in my attempts to agree an appropriate amendment informally with you prior to any formal consultation. This chain of discussion and actions following your concerns regarding the proposed cable routeing through the northern part of your Kent Street land was recorded in my letter to you of 18th May 2023 – the extract from which is set out in italics below:

"Further modifications to the southern cable route (option) were also explored by the Rampion 2 team, to establish if a route with comparable or only marginally increased impacts to the 'northern

cable route' could be identified which would be acceptable both to Rampion 2, having regard to objectively assessed impacts, and to you, and would therefore enable us to reach an agreement on the land rights required for Rampion 2.

Through this exercise, a further modified route immediately to the north of the southern cable route was identified as shown cross hatched green and orange on the enclosed plan ref 42285-WOOD-CO-ON-PN-MD-0020, which was hand delivered to your address on 7th April 2023. We discussed this plan further and you stated that, as the cable routeing went through the centre of the field, it would have a sterilising impact on your farming and as such you considered it unacceptable. You requested that Rampion 2 consider:

1) the movement of the cable route towards the southern boundary of the field and
2) an extension of the proposed trenchless cable installation (by Horizontal Directional Drill (HDD)), eastwards into the next field. This would extend the drilled section further into the open cut trenched section (shown cross hatched green to the east on the enclosed plan).

The above requested changes were considered by the Rampion 2 team. However, we concluded that such a change was not justified on balance. This was due to it having greater potential impacts (including the amenity of nearby residents, effects on trees and vegetation) and significant additional cost,

We subsequently spoke on the telephone in light of the above and you indicated that the proposed cable route shown on plan 42285-WOOD-CO-ON-PN-MD-0020 would have a greater impact on your farming than the 'southern route'. You then asked for the cable to be located as far south as possible in the northern cable route corridor (as consulted on in summer 2021). I explained that there are tree and hedge buffers which need to be maintained which prevent the siting of the cable immediately adjacent to the field boundary, but that we would seek, in our final design, to site the cables as far south as possible within the DCO application boundary to reduce interference with any tree planting carried out by you so far as practicable.

I confirm that, further to the above, the northern cable route as shown on the enclosed plan will be included in our DCO red line boundary for our consent application. We remain of the view that, with ongoing planning and mutual co-operation, our proposals and the tree planting regime you have started to implement can both be delivered…."

Rampion 2 and Carter Jonas representatives have made repeated attempts to engage with you since 2020 and more recently to arrange discussions to talk about mitigation measures on site. Please would you specify the incorrect evidence referred to.

<u>Woodland Trust Withdrawal of Support for "Platinum Jubilee Woodland" Project</u>

Rampion 2 has asked for information and correspondence with the Woodland Trust relating to the Queens Green Canopy project. Aside from the indicative plan your agent forwarded which covered all of the land at Kent Street and included land not in your ownership, no further information giving any clarity on the project proposals were forwarded. Rampion 2 has not stated that the Woodland Trust has withdrawn support for the Queens Green Canopy for any trees planted at Kent Street but outlined the position according to the information provided and requested any further information which might help clarify the position further.

You state that on 18th April 2023 Nigel Abbott arranged to meet at Kent Street the following week, however he never followed it up. You were aware that we were willing to meet, but instead you requested that I leave suggested design amendment plans and information in your mailbox for consideration. You subsequently had a conversation with Nigel on 26th April where again you did not put forward any indication of wishing to proceed with the offered meeting.

Commitment register C204

My letter of 24th May 2023 offered supply of the extract from register if requested. This was not requested but as you have mentioned it in your letter I sent a hard copy of the commitments register to you along with other documents relevant to your interests below on 26/10/23.

Ecology, Cultural Heritage, Water Environment and Agricultural / Soil Assessments

The Environmental Assessment Non-Technical Summary includes summaries on the following chapters:

Document **6.2.22 Environmental Statement - Volume 2 Chapter 22 Terrestrial ecology and nature conservation.** Appendix 22 of the Environmental Statement sets out ecological surveys.
Document **6.3.25 Environmental Statement - Volume 3 Chapter 25 Historic Environment**
Document **6.2.26 Environmental Statement - Volume 2 Chapter 26 Water Environment**
Document **6.2.20 Environmental Statement - Volume 2 Chapter 20 Soils and agriculture**

The full chapters of these documents set out the assessment of impacts, methodologies and project commitments. Hard copies of these chapters, together with the Outline Code of Construction Practice and Soil Management Plan have been sent to you.

Outline Code of Construction Practice and Soil Management Plan

The Outline Code of Construction Practice and Soil Management Plans set out measures to be taken to manage construction impacts.

Stockperson Funding

Rampion 2 would be prepared to discuss the farm's requirements for availability of a stockperson and has already offered to discuss commitment to funding. However our land agent Carter Jonas needs to understand the current farm management arrangements and to discuss potential mitigation solutions before commitments can be fully closed out. I understood that Nigel Abbott tried to arrange a meeting w/c 21st August with your then newly appointed agent Chris Tipping of Batcheller Monkhouse but you were away. We look forward to receiving potential meeting dates to progress these discussions.

Meeting arrangements

Please do contact me directly on my mobile to arrange a site visit/ meeting and confirm if you would like this to be with an engineer. This will avoid any ambiguity with regard to 3rd party arrangements.

Documents requested by Guy Streeter 7/11/22 15/12/22

Documents were couriered to your College Wood Farm address on 22nd November 2022. A signature for delivery was required and we understand from your agent that you were abroad on holiday at the time, so the documents could not be delivered. We immediately contacted your agent- Guy Streeter and it was agreed with Guy Streeter in your absence that the documents should be sent to his office. In Guy Streeter's email to us dated 22nd November he stated that he would give the documents to you 'in person' and we had no reason to doubt that this action had not been carried out.

DCO Examination format

On our phonecall 18-7-23, we discussed the likely timing of an Examination and I explained that it is usual for DCO examinations to involve less formal 'hearings' set up to go through landowner representations with the Inspectors rather than a formal public inquiry setting and I advised you to write to PINS (which you advised you had already done). I was attempting to provide you with helpful information.

Discrimination escalation correspondence

The letter dated 24th May 2023 provided details of a RWE contact outside the project and invited you to contact them should you wish to register a formal complaint. The details were provided but I understand you have not sent anything to Jodi Gunn or contacted her. Please do contact Jodi Gunn if you would like to progress those discussions.

Yours sincerely,

Vicky Portwain
Land Transaction Manager
Rampion 2

Plan 42285-WOOD-CO-ON-PN-MD-0031
Letter from Vaughan Weighill to Guy Streeter dated 19th August 2022

Cc Nigel Abbott – Carter Jonas

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Appendix 28
Bennun et al 2021

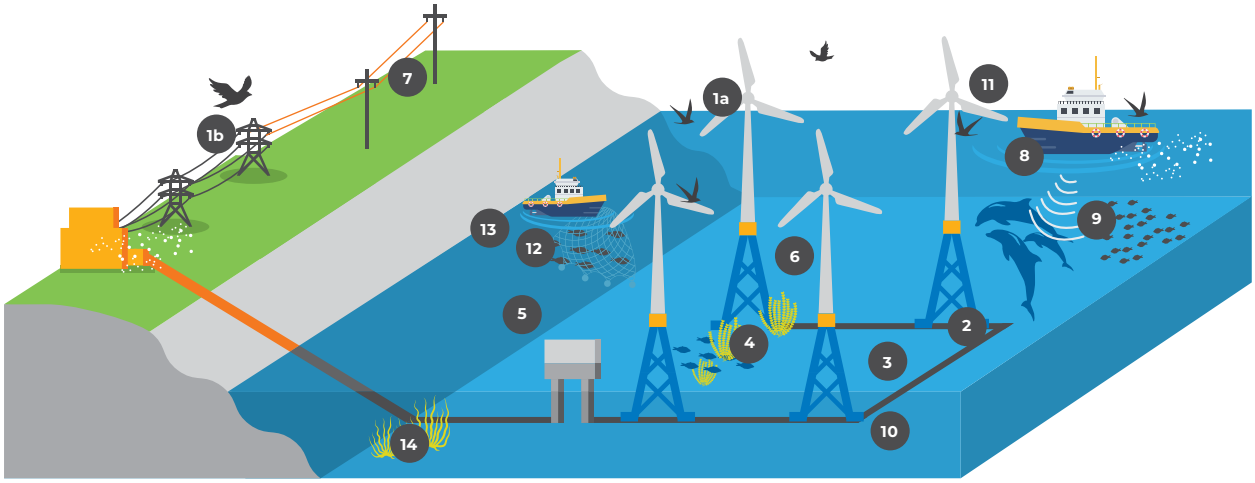
Bennun, L., van Bochove, J., Ng, C., Fletcher, C., Wilson, D., Phair, N., Carbone, G. (2021). *Mitigating biodiversity impacts associated with solar and wind energy development. Guidelines for project developers.* Gland, Switzerland: IUCN and Cambridge, UK: The Biodiversity Consultancy.

Biodiversity impacts associated to off-shore wind power projects

The available scientific literature agrees on the key impacts of offshore wind: i) risk of collision mortality; ii) displacement due to disturbance (including noise impacts); iii) barrier effects (also including noise impacts); iv habitat loss; and v) indirect ecosystem-level effects. There is still much to understand on these five key impacts – but it is clear that that they must be considered carefully in all stages of offshore wind farm planning and development. The broad approach to undertaking an impact assessment for onshore wind energy is often equally relevant to offshore wind projects.

There is also evidence that in some circumstances offshore wind farms can have positive biodiversity impacts (case study 1), including introduction of new habitat, artificial reef effects and a fishery 'reserve effect' where marine fauna tend to aggregate due to the exclusion of fishing (Section 7.2.1). However, it should be noted that this may in turn lead to an increased attraction of foraging seabirds to the wind farm area. Table 6-1 summarises the key biodiversity impacts of offshore wind farm development, with selected references. For more detailed information, read the IUCN ***Mitigating biodiversity impacts associated with solar and wind energy development Guidelines for project developers***.

Figure 6.2 Potential impacts on biodiversity and the associated ecosystem services due to fixed-bottom offshore wind developments. Please see Table 6-1 for details on each impact type



1. Bird and bat collision with, a) wind turbines and b) onshore transmission lines
2. Seabed habitat loss, degradation and transformation
3. Hydrodynamic change
4. Habitat creation
5. Trophic cascades
6. Barrier effects or displacement effects due to presence of wind farm
7. Bird mortality through electrocution on associated onshore distribution lines
8. Mortality, injury and behavioural effects associated with vessels
9. Mortality, injury and behavioural effects associated with underwater noise
10. Behavioural effects associated with electromagnetic fields of subsea cables
11. Pollution (e.g. dust, light, solid/liquid waste)
12. Indirect impacts offsite due to increased economic activity and displaced activities, such as fishing
13. Associated ecosystem service impacts
14. Introduction of invasive alien species

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Table 6-1 Summary of the impacts of offshore wind farm development on biodiversity. The significance of particular potential impacts will be context-specific

No.	Impact type	Project stage	Description
1	**Bird and bat mortality from colliding with turbine blades and/or onshore transmission lines**	Operation	Birds flying in the turbine rotor swept zone are potentially at risk of collision and serious injury or death[1] (e.g. migratory birds passing through the wind farm area, or birds in the area to forage/hunt for prey). The percentage of time spent flying at collision risk height is key,[2] as is an understanding of species-specific avoidance behaviour.[3] Nocturnal migrant passerines are also at risk of collision, since they can be drawn to the nacelle lights.[4] Bats are also potentially at risk of collision and possibly barotrauma. While barotrauma (injury caused by sudden pressure changes around the moving blades) was initially hypothesised as a major source of bat mortality at onshore wind turbines,[5] there is little empirical evidence for this. Very little is known about the potential impacts of offshore wind farms on bats, although there are some empirical studies/observations. A good summary of the risk to bats from offshore wind farms is given in a recent review.[6] Bats have been shown to forage within wind farms and other offshore installations,[7] and studies have shown foraging at sea, for example between 2.2 km and 21.9 km[8] from the coast. Bats may also be attracted to offshore wind turbines, potentially by lighting.[9] While there is little information on flight altitudes of bats on migration, and on behaviour of bats at operational offshore wind farms,[10] there is sufficient evidence to suggest that many species migrate offshore and use islands, ships and other offshore structures as opportunistic/deliberate stopovers.[11] The characteristics of offshore migration of bats are well summarised in a recent review.[12] Onshore, there is potential for collisions with the (thin and hard to see) earth wire of transmission lines, which may lead to significant fatalities for some species such as bustards.[13]
2	**Seabed habitat loss, degradation and transformation (bottom-fixed turbines)**	Construction/ operation	Areas of benthic habitat may be lost completely under the foundation or degraded due to construction activity (causing sediment plumes and smothering), displacing benthic organisms permanently or temporarily. The total area lost is, however, generally tiny in relative terms.[14] There may also be impacts associated with lighting and vibration associated with construction, such as cable trenching remote-operated vehicles and foundation installation. Installation of foundations, scour protection and turbine towers can also have hydrodynamic effects that alter the demersal habitat or change water column conditions (see row no. 3).

1 Desholm & Kahlert (2005); R. W. Furness et al. (2013); Humphreys et al. (2015).
2 King (2019).
3 Skov et al. (2018).
4 BirdLife International (n.d.).
5 Baerwald et al. (2008).
6 Hüppop et al. (2019).
7 Ibid.
8 Sjollema et al. (2014).
9 Rydell & Wickman (2015).
10 Ahlén et al. (2007); Hüppop et al. (2019); Lagerveld et al. (2017).
11 Hüppop et al. (2019).
12 Ibid.
13 Mahood et al. (2017).
14 Perrow (2019).

3	**Hydrodynamic change (bottom-fixed turbines)**	Operation	The installation of foundations, scour protection and turbine towers can change hydrodynamic conditions, potentially affecting benthic communities and fish species.[15] Effects may be negative (e.g. scour around turbines, increased turbidity and smothering) or positive, through habitat creation (see row no. 4). Although impacts of wind turbines on the upper ocean is not yet well understood, turbines can disturb downwind wind fields by decreasing wind speed and increasing turbulence. Wind-wake effects can cause both upwelling and downwelling, potentially affecting an area 10–20 times larger than the wind farm itself, with possible knock-on ecosystem effects.[16]
4	**Habitat creation (including reef and refuge effects associated with bottom-fixed turbines)**	Operation	The new hard substrate introduced in turbine foundations, scour protection and turbine towers can create new habitat for colonisation by benthic organisms (case study 17). Turbine bases also often appear to provide a refuge for fish.[17] A typical offshore wind turbine can support up to four metric tonnes of shellfish,[18] which might be expected to attract a range of other organisms to the wind farm area. The initial colonisation of species within lower trophic levels is quickly followed by larger invertebrates, such as crabs and lobsters and small fish, thereby attracting larger predatory fish.[19] Such alteration of the local biodiversity status could have a positive ecosystem services influence in terms of biodiversity, tourism and fisheries effects.[20] The exclusion of fisheries from the offshore wind farm area, which may or may not be regulatory – depending on the jurisdiction – can offer refuge and shelter for both benthic communities and fish. A review of offshore wind power for marine conservation concluded that offshore wind farms can be at least as effective as existing marine protected areas in terms of creating refuges for benthic habitats, benthos, fish and marine mammals.[21]
5	**Trophic cascades**	Operation	Changes in benthic habitat and hydrodynamic conditions, and new habitat creation associated with the offshore wind farm (see row no. 4), have the potential to affect species abundance and community composition, and therefore affect predator-prey dynamics around an operational offshore wind farm. This is likely to be a greater risk to fixed-bottom compared to floating turbines. Evidence shows that important changes to the fish community structure and the trophic interactions within the local marine ecosystem occur where fish are attracted to the wind farm (in turn attracting foraging birds and marine mammals to the wind farm area). [22] A Dutch study found more porpoise activity in the operational wind farm area in reference areas outside the wind farm, which is most likely linked to the increased food availability, exclusion of fisheries and reduced vessel traffic.[23] A study on wind farms in the Bay of Seine, France showed that higher trophic levels including some fish, marine mammals and seabirds responded positively to the aggregation of biomass on wind farm structures, and that total ecosystem activity increased after construction of the wind farm,[24] although these wind farm effects on the coastal trophic web are considered as limited. The effect of trophic cascades may become more apparent with long-term monitoring.

15 ICES (2012).
16 Boström et al. (2019).
17 Bergström et al. (2013); Langhamer (2012); Wilhelmsson et al. (2010).
18 Emerging Technology (2017).
19 Gill & Wilhelmsson (2019).
20 Soukissian et al. (2017).
21 Hammar et al. (2015).
22 Gill & Wilhelmsson (2019).
23 Lindeboom et al. (2011).
24 Raoux et al. (2017).

6	**Barrier effects or displacement effects due to presence of wind farm (bottom-fixed turbines)**	Construction/ operation	Barrier and displacement effects[25] arise where the wind farm presents an obstacle to regular movements to and from breeding colonies or migration routes, or deters species (birds, marine mammals, turtles and fish) from regular use of the wind farm area. Whilst there are few supporting empirical studies, the variation in observed displacement levels for different seabird species is hypothesised to be due to several factors, including habitat quality, prey distribution and wind farm location relative to the colony/feeding grounds.[26] Models show that red-throated divers (*Gavia stellate***)**, for example, may experience displacement effects up to 15 km from the wind farm.[27] Telemetry studies of guillemots (*Uria aalge*) also show avoidance behaviour during the breeding season.[28] The effect of barrier and displacement is hard to quantify (manifested through impacts on daily time and energy budgets, which may ultimately reduce demographic fitness), and the two may be difficult to differentiate.[29] The impact on birds may vary spatiotemporally due to habituation and cumulative effect of other wind farms.[30] Conversely, some foraging seabirds have been noted to be attracted to wind farm areas[31] (and see habitat creation and trophic cascades above in this table). Bats' response to turbines differs across species and locations. Very little is known about the potential impacts of offshore wind farms on bats, although there are some empirical studies/observations (see row no.1).
7	**Bird and bat mortality through electrocution on associated onshore distribution lines**	Operation	With respect to the onshore facilities associated with an offshore wind farm, electrocution rates on the pylons of low- or medium-voltage lines can be high and disproportionately affect some species that use low-voltage pylons as perches when hunting or nesting. Electrocutions may be partially responsible for the decline of some long-lived species, and are rarely significant on high-voltage transmission lines.[32] In developed countries with better-developed electricity/grid facilities, offshore wind developments are likely to connect into existing transmission/ distribution facilities. However, in emerging markets, the onshore grid facilities may need to be constructed from scratch. There is limited evidence of risks to bats, although electrocution of large bat species, particularly fruit bats, has been identified as an issue associated with distribution lines.[33]
8	**Mortality, injury and behavioural effects associated with vessels**	Site characterisation/ construction/ operation/ decommissioning	Marine mammal collision with vessels is a known risk – most reports involve large whales, but all species can be affected.[34] Marine mammals in the wind farm area are potentially at risk of vessel strike during the site characterisation phase, and throughout wind farm construction, maintenance and decommissioning, leading to injury or mortality. They may also be subject to behavioural and harassment impacts associated with vessel activity during these phases.[35] Any marine mammal using the area is potentially at risk. A study using encounter rate theory has shown that for whales, the overall expected relative mortality is approximately 30% lower where vessel speed is regulated.[36] Turtle species are also vulnerable to vessel strike when they surface to breath, bask or forage at/near the surface.[37] Adult turtles appear to be at increased risk during breeding and nesting season.[38]

25 Humphreys et al. (2015); Masden et al. (2009); Vallejo et al. (2017).

26 Cook et al. (2014); Furness & Wade (2012); Furness et al. (2013); Vanermen & Stienen (2019).

27 Dorsch et al. (2016).

28 Peschko et al. (2020).

29 Humphreys et al. (2015).

30 Drewitt & Langston (2006).

31 Cook et al. (2014); Skov et al. (2018); Walls et al. (2013); Welcker & Nehls (2016).

32 Angelov et al. (2013); Dixon et al. (2017).

33 Kundu et al. (2019); O'Shea et al. (2016); Tella et al. (2020).

34 Cates et al. (2017).

35 In the U.S., incidental take authorizations may be issued by NOAA Fisheries for activities that could result in the harassment of marine mammals. The effects of these activities are typically analyzed pursuant to the National Environmental Policy Act of 1969 (as amended) and, where endangered or threatened marine mammals may be affected, the Endangered Species Act of 1973 (as amended).

36 Martin et al. (2016).

37 NOAA Fisheries (2017).

38 Ibid.

9	**Mortality, injury and behavioural effects associated with underwater noise**	Site characterisation/ construction/ decommissioning	Marine mammals,[39] turtles[40] and fish[41] are potentially at risk of sub-lethal exposure to underwater noise arising from offshore wind farm site characterisation (impulsive noise from seismic survey airguns), construction (impulsive noise from piling operations), operation (continuous noise associated with operational wind turbines) and vessel activity (continuous noise from engines and propellers)[42,43,44] and from decommissioning activities (cutting and drilling to remove/cut off subsea structures). As sound propagates through seawater it loses energy, which happens more quickly at high frequencies but can still be detected tens of kilometres away.[45] Four zones of noise influence are recognised:[46] i) zone of audibility (where animals can detect sound); ii) zone of responsiveness (where animals react behaviourally or physiologically); iii) zone of masking (where noise is strong enough to interfere with detection of other sounds for communication or echolocation); and iv) zone of hearing loss (near enough to the source that received sound level can cause tissue damage or hearing loss). The available data show that all marine mammals have a fundamentally mammalian ear (resembling land mammal inner ears), which has adapted in the marine environment to develop broader hearing ranges.[47] Impacts are best studied for harbour porpoise (*Phocoena phocoena*) and harbour seal (*Phoca vitulina*), grey seal (*Halichoerus grypus*) and bottlenose dolphin (*Tursiops truncatus*).[48,49] These are the more abundant species of shallow shelf seas in Europe, where there is a concentration of offshore wind farm activity. A number of studies have shown disturbance and partial displacement of harbour porpoises up to distances of 20 km during piling activities, reversible within 1–3 days.[50] Hearing capabilities in fish vary substantially between species. One method to understand their sensitivity is based on differences in their anatomy.[51] Some are highly sensitive such as Clupeids (herrings)[52] and Gadoids (cods).[53] Most other species detect sound through particle motion.[54] The current understanding of the impact of anthropogenic underwater sounds on fish is limited by large gaps in knowledge of effects of sound on fishes.[55] However, there is evidence that especially intense sounds affect sound detection and behaviour, and potentially result in injury and death.[56] Whilst there is significant data on hearing in pinnipeds, cetaceans and fish, far less in known about possible impacts on hearing in turtles.[57]

39 Bailey et al (2010).
40 Dow Piniak et al. (2012).
41 Sparling et al. (2017); Thomsen et al. (2006).
42 Hastie et al. (2019).
43 Popper & Hawkins (2019).
44 Weilgart (2018).
45 Nehls et al. (2019).
46 Ibid.
47 NRC (2003).
48 Hastie et al. (2015).
49 Bailey et al. (2010); Nehls et al. (2019).
50 Nehls et al. (2019).
51 Popper et al. (2014).
52 Popper (2000).
53 Hawkins & Popper (2017).
54 Ibid.
55 Hawkins et al. (2015).
56 Hawkins & Popper (2018).
57 Ketten (2017).

10	**Electromagnetic fields of subsea power cables: behavioural effects**	Operation	Studies suggest fish and other benthic organisms could be influenced behaviourally and physiologically by electromagnetic fields (EMF) associated with wind farm cables. These effects depend on type of cable, power, type of current and burial depth. To date, this potential impact is relatively understudied.[58] Electromagnetic-sensitive species come from across many taxa, but there is a paucity of knowledge on a restricted number of species, on how they respond to anthropogenic electric or magnetic fields compared with natural bioelectric/geomagnetic fields.[59] Sensitive species include those with a significant migratory phase, including salmonids and eels, for which EMF may constitute a potential barrier to movement[60] and those with electroreceptors such as sharks, rays, sturgeons and lampreys.[61]
11	**Pollution (dust, light, solid/liquid waste)**	Site characterisation/ construction/ operation/ decommissioning	The site characterisation phase may involve light pollution effects associated with survey vessels (as well as noise, as already noted). Construction, operation and decommissioning can lead to water, dust, waste and light pollution impacts. Examples specific to wind developments are limited, but studies suggest birds and bats may be attracted to lighting at offshore installations.[62,63] Attraction to lighting combined with poor weather conditions (poor visibility) can lead to birds flying at lower altitudes, which can dramatically increase collision risk with anthropogenic structures.[64]
12	**Indirect impacts**	Construction/ operation/ decommissioning	There is potential for the displacement of fishing activities and other marine traffic (shipping routes and recreational vessels), arising from offshore wind farm presence, leading to pressures on biodiversity and ecosystem services (see row no. 13) outside the wind farm area. This can increase pressure on sensitive areas elsewhere, as is reported for Taiwan.[65] Displacement of fishing effort, combined with the habitat created within the wind farm area (see row no. 4), can result in a 'refuge' effect, where fish and benthic communities proliferate in the wind farm area, in the absence of/reduction in fishing activity, with subsequent attraction of predator/foraging species. In areas of weaker governance, such as emerging markets and less developed areas, offshore wind farm construction may also give rise to in-migration of the associated workforce and their families, with induced access to coastal areas via new/improved roads: new human settlements in previously remote areas resulting in degradation of natural habitats; unsustainable natural resource use; and illegal or unsustainable hunting, fishing or harvest of vulnerable species. For onshore facilities, indirect impacts could result from road construction and improvement associated with substations, grid connection, access to the coastal cable landfall site, and any expansion/ enhancement/increased use of ports and harbours. These can increase settlement and induce access to formerly remote areas.

58 Bergström et al. (2013); Öhman et al. (2007); Taormina et al. (2018); Wilhelmsson et al. (2010).

59 Perrow (2019).

60 Gill & Wilhelmsson (2019).

61 Ibid.

62 May et al. (2017); Rebke et al. (2019).

63 BirdLife International (n.d.b); Rydell & Wickman (2015).

64 Hüppop et al. (2019).

65 Zhang et al. (2017).

13	**Associated ecosystem service impacts**	Construction/ operation/ decommissioning	In the offshore environment, construction of a wind farm could lead to loss of important fishing areas and displacement of fishing effort. Some fishing activities may be displaced due to safety or gear limitations (e.g. dredging displaced because of the wind farm structures), but some may continue (e.g. pot fisheries).[66] A study in the German exclusive economic zone (EEZ) of the North Sea indicated that the international gillnet fishery could lose up to 50% in landings when offshore wind farm areas are closed entirely for fisheries.[67] In Korea, a study into the possibility of fishing in an offshore wind farm area, based on the risk associated with the presence of turbines and cables, found the highest risk methods to be stow net, anchovy drag net, otter trawl, Danish seine and bottom pair trawl. Lowest risk methods were single-line fishing, jigging and anchovy lift net.[68] The exclusion of fisheries from the offshore wind farm area may or may not be regulatory – depending on the jurisdiction. In the decommissioning stage, not all structures will necessarily be completely removed – some may be left in place if they have become heavily colonised and support an important ecosystem – thus some fishing activity may still not be possible after the end of the wind farm life for safety reasons. In the nearshore and coastal areas, and in the vicinity of the onshore infrastructure required (substation/grid connection, ports, harbours), there could also be a loss of cultural values, or sense of place/belonging arising from wind farm construction/presence. In some areas, particularly coastal, there might also be tourism, aesthetic-related impacts. These associated ecosystem service impacts could have adverse effects on the well-being of local people. However, it is not yet well understood in relation to offshore wind farm development.
14	**Introduction of invasive alien species**	Site characterisation/ construction/ operation/ decommissioning	Movement of equipment, people or components may facilitate the introduction of invasive alien species (IAS), for example via movement of vessels on hulls and in ballast water and other equipment.[69] The hard substrate used for foundations may provide habitat for invasive species, allowing newly introduced species to become established in the area, or existing populations of invasive species to expand.[70]

Note: The numbering corresponds to the illustration in Figure 6.2.

66 Dannheim et al. (2019).

67 Stelzenmüller et al. (2016).

68 Jung et al. (2019); Tonk & Rozemeijer (2019).

69 Geburzi & McCarthy (2018); Iacarella et al. (2019).

70 De Mesel et al. (2015); Perrow (2019).

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Appendix 29
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REVIEW ARTICLE OPEN

Reviewing the ecological impacts of offshore wind farms

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Offshore wind energy is widely regarded as one of the most credible sources for increasing renewable energy production towards a resilient and decarbonised energy supply. However, current expectations for the expansion of energy production from offshore wind may lead to significant environmental impacts. Assessing ecological risks to marine ecosystems from electricity production from wind is both timely and vital. It will support the adoption of management measures that minimize impacts and the environmental sustainability of the offshore wind energy sector.

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INTRODUCTION

Ocean energy and offshore wind energy (OWE), in particular, have been identified as potential renewable energy sources, with a view to decarbonizing and reducing greenhouse gas emissions[1] and contributing to achieving the United Nations Sustainable Development Goal (SDG) 7, Affordable and Clean Energy[2]. OWE provides local electricity production capacity and reduces the need for oil or gas maritime transportation, preventing the risk of spills[3]. Moreover, the current context of increasing energy prices, supply-side constraints, and dependency on third countries for traditional energy sources are positioning OWE as a strategic renewable energy source to achieve resilience.

In the last decade, electricity production from wind energy has grown exponentially worldwide in the last decade, benefiting from technological advances[4], declining production costs, and strong subsidies from states and investors[5,6]. In terms of the Levelized Cost of Energy, an almost 55% drop is anticipated from 2018 to 2030[7], and 37% to 49% declines in production costs by 2050[8], making the offshore wind sector increasingly competitive with fossil fuels[7].

Offshore wind farms (OWFs) already accounted for 10% of new wind power installations around the world in 2019[5], and are expected to contribute more than 20% of the total installed capacity of offshore wind electricity production by 2025[5]. To attain this growth rate, the global installed capacity of offshore wind projects needs to increase almost tenfold by 2030 (to 228 GW) and continue to rise to 1000 GW by 2050[9]. To achieve such expectations, experts predict that by 2035, 11–25% of all new offshore projects globally will feature floating foundations[8].

In 2018, more than 80% of the global installed offshore wind capacity was located in Europe[1]. However, estimations are that between 240 and 450 GW of offshore wind power production capacity are still needed by 2050 to contribute to the European Union's goal of climate neutrality[10–12]. To achieve such an objective, OWE will need to account for at least 50% of the total energy mix in 2050 and supply 30% of future electricity demand in Europe[10]. Accordingly, the European Offshore Renewable Energy Strategy[11] was published as part of the European Green Deal[10], which is expected to position the European Union as a global leader in clean technologies[11].

Renewable energy production growth should not lead to significant environmental harm nor compromise environmental objectives, and new projects must be compatible with biodiversity protection and conservation objectives (e.g., SDG 14, Life Below Water, or the Convention on Biological Diversity' post-2020 targets[13]).

When developing plans for a new industry such as offshore renewables, there may be interactions between devices and marine species or habitats that regulators and stakeholders perceive as risky[14], as there are still considerable gaps in scientific knowledge about the ecological impacts of wind turbines[15,16]. Previous studies have shown a gap between perceived and actual risks, with the former arising from uncertainty or lack of data about the real environmental impacts of ocean energy devices[3]. Consequently, uncertainties regarding the assessment of impacts resulting from cumulative pressures caused by OWE production devices also lead to substantial delays during the consenting process[14,17,18].

Consideration of environmental impacts of new OWE projects, together with implications to other maritime sectors (e.g., fisheries, tourism), need to be assessed during strategic planning processes at administrative, regional, national, or even international levels through marine spatial planning (MSP) processes[19]. The adopted plans should apply an ecosystem-based approach, ensuring that the pressures exerted by maritime activities do not compromise the achievement of a healthy ocean and the resilience of marine ecosystems, and their ability to sustainably supply marine goods and services[20]. However, recent reviews have highlighted that environmental impacts and MSP aspects are still poorly addressed in OWE planning[21]. There is thus an urgent need to identify and assess potential environmental impacts associated with offshore energy production in order to prevent or minimize negative effects at a very early stage of the OWE planning process[22].

In this review, we assess the ecological impacts of OWE devices by mapping the full set of interactions between the latter and marine ecosystem elements (i.e., species, habitats, ecosystem structure and function) useful to planning processes. A systematic literature review was conducted to obtain the most updated scientific findings derived from environmental studies concerning wind energy devices from peer-reviewed literature and selected

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technical reports[23–25]. The quantitative summaries of scientific findings were extracted through a meta-analysis (see Supplementary Sections 1, 2, for the full description of the review process and data analysis).

SCIENTIFIC KNOWLEDGE ON ENVIRONMENTAL IMPACTS OF WIND ENERGY DEVICES

A total of 867 findings on pressures due to wind energy devices and impacts on ecosystem elements were extracted from 158 publications. This is a relatively small number of articles among the total screened (1353). Half of the analysed publications (51%) presented empirical evidence, while 36% of the studies were based on modelling approaches, including the modelled propagation of underwater noise[26]. Literature reviews accounted for 11% of the publications, and only 1% of the studies were based on expert judgement (Supplementary Section 2).

A continuous increase in the number of publications is identified, especially in the last eight years (74% of the scientific publications), which is in line with the increase of OWFs and installed production capacity[1,5,9]. Studies have been conducted in shallow seas (North Sea, 66% of the publications), during the operational phase (64%), in shallow waters (90% at <30 m depth), close to the coast (56% <20 km offshore), with few turbines (80% with <81), low production capacity (63% with <160 MW), and a small area (67% <70 km^2).

Most studies investigated single pressures, with few papers addressing the interaction of two or more pressures produced by wind energy devices[27–29]. In total, 24 studies investigated more than one pressure, and only about half of them dealt with three or more pressures (one study investigated four pressures and three studies five pressures[30–32]). Among them, three were literature reviews[30,31,33]. Only 23 studies analysed two or more ecosystem elements simultaneously (most of them being review articles, e.g.,[29,30,33]). Among these, only one study considered five ecosystem elements[33]. This represents a shortcoming in the analysis of wind energy devices impacts, since it is well-known that human activities can produce several co-occurring pressures, which can result in cumulative, synergistic or antagonistic impacts on the ecosystem[34–36]. Investigating multiple interactions between human activities and ecosystem elements is urgent, given that future wind energy developments will add to the cumulative impacts already produced by existing activities and climate change[37]. Additionally, due to the expected increased demand for marine space, multiple ocean uses are likely to take place in the same area as OWE activities and an increase of local cumulative pressures is likely to happen[38,39].

ENVIRONMENTAL IMPACTS FROM WIND ENERGY PRODUCTION DEVICES ON MARINE ECOSYSTEMS

Offshore energy production can have both positive and negative impacts on marine ecosystems[33,40]. Negative impacts are reported more frequently (up to 10% of the scientific findings) being especially linked to birds, marine mammals, and ecosystem structure. Positive effects are less reported (up to 1% of scientific findings), relating mostly to fish and macroinvertebrates (Fig. 1).

The ecological risks derived from the negative impacts of wind energy devices can vary biogeographically, depending on the environmental characteristics and vulnerability of the affected area (e.g., presence of migrating bird species especially sensitive to wind turbines[41]). The identification of potential significant impacts is, therefore, always case-specific. In particular, the real impact of an OWF on protected species and habitats will show

Fig. 1 Most frequently reported environmental impacts of wind energy devices on the most representative indicators of ecosystem elements, by type (positive/negative) and magnitude (high to low). See Supplementary Table 5 for the full list of impact types and magnitudes for each ecosystem indicator.

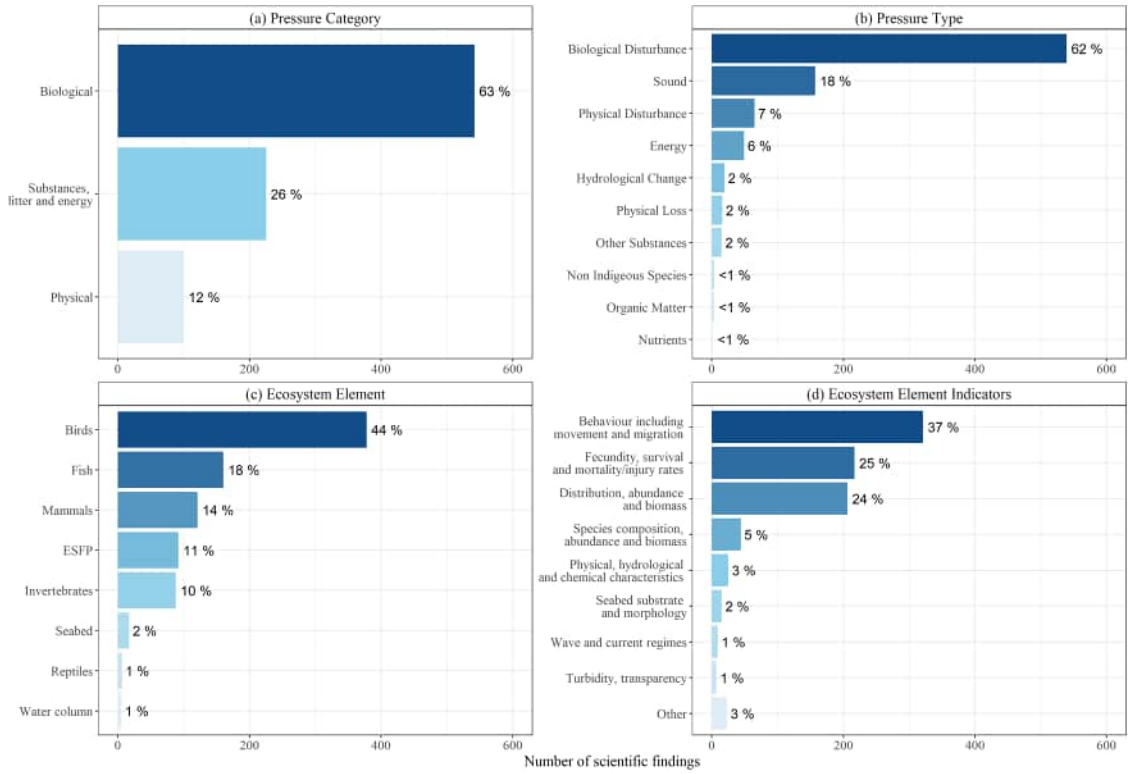

Fig. 2 Proportions of scientific findings of interactions between offshore wind energy devices and marine ecosystem extracted from the literature review. The information is classified according to studied pressure category (**a**) and type (**b**); and for ecosystem elements (**c**) and indicators assessed (**d**) in scientific research. ESFP ecosystem structure, functions, and processes.

high spatial variability; it must be carefully assessed with respect to local conservation objectives and the affected species/habitats[41]. Furthermore, environmental impacts will also depend on the initial state and resilience of the area, which can change dramatically for some ecosystem elements[42–44].

Indirect impacts, which tend not to be fully investigated, must also be considered. Increases in prey species (e.g., pressure tolerant) at OWFs will increase food availability to higher trophic levels (e.g., bird and mammal species), thereby increasing their populations[45–48]. Impacts will thus vary among species within the same ecosystem element (e.g., different seabird species may be affected in different ways by turbines)[49]. In some cases, impacts may be positive (e.g., seabirds have rest areas and more resources for food[50]), while in others, species may suffer significant adverse effects impacting their behavior[51–53]. Impacts may spread far from the OWF area (e.g., lower number of organisms of migratory populations at the final destination), as is the case for land-based wind farms[49]. It is, therefore, fundamental to consider the spatial and temporal distribution of the most sensitive species when determining the risks associated to a given project. For the adoption of such an approach, better data is required on species distribution and abundance over annual cycles and on the migration routes of birds, fish, and marine mammals[15].

Despite the evident negative impacts of OWFs on ecosystem elements, potential positive impacts must also be highlighted. According to several authors, positive environmental impacts are linked to reserve and reef effects on the area of OWF deployment and mooring structures[30,31,54,55]. These can function as artificial reefs and fish aggregation devices for small demersal fish[45,54,56,57], attracting more marine life than natural reefs[54]. Evidence suggests that OWFs may enhance diversity in areas with homogeneous seabed[58]. Also, the prohibition of bottom trawling near OWFs for safety reasons eliminates disturbance of fish, benthos, and benthic habitats[59,60], partially by providing protection from fishing[61]. Findings suggest that negative impacts on fishing activities can be mitigated by spill-over effects due to increased catches (up to 7%, close to wind farms) and slight modifications in catch composition[61]. Long-term monitoring and additional information on ecological processes influencing fish stock dynamics will further enable the demonstration of whether extra production at population level occurs[62].

Pressures on ecosystem elements and their indicators

Of the 867 findings identified, biological pressures correspond to the most-studied pressure category (63%) (Fig. 2a). From 16 pressure types (see Supplementary Table 4 for the full list), 10 pressures were assessed, the most frequent ones being those associated to biological disturbance[63–65] and noise input[66,67] (62% and 18% of the findings, respectively; Fig. 2b). Most findings associated to ecosystem elements were reported for species (87%, especially birds), ecosystem structure, functions, and processes (11%), and habitats (3%) (Fig. 2c). The most studied indicators were behaviour[68,69] (37%), fecundity, survival, and mortality/injury rates[70] (25%), and distribution, abundance and/or biomass[61,71] (24%) (Fig. 2d).

Indicators that are most studies for analysing the effects of the pressures produced by wind turbines on ecosystem elements are identified in Table 1. Despite the relatively high number of species studied, there is a bias toward northern distribution species such as *Phocoena phocoena* (47 findings), *Phoca vitulina* (26 findings), *Uria aalge* (16 findings), or *Gadus morhua* (13 findings)[55,66,72,73], and a lower number of findings to invertebrates (see Supplementary Tables 7–10). However, with the expected global expansion of OWFs projects to new areas, impacts on temperate, subtropical, and tropical species must be further investigated[74]. While disturbance of high taxonomical levels is important (i.e., mammals, seabirds, fish)[75], physical loss and physical disturbance of benthic habitats[31] needs to be investigated in detail, as large OWF

Table 1. Interactions between pressures from offshore wind devices and ecosystem elements, including species, habitats and ecosystem structure, functions and processes.

Indicators for:	Ecosystem elements				
Species	Birds	Fish	Mammals	Invertebrate	Reptiles
Number of findings	378	160	121	88	6
Number of species	111	49	11	39	Not specified
Distribution, abundance and/or biomass	49 (13%)	73 (46%)	28 (23%)	56 (64%)	
Behaviour (including movement and migration	175 (46%)	54 (34%)	77 (64%)	12 (14%)	3 (50%)
Fecundity, survival, and mortality/injury rates	154 (41%)	31 (19%)	15 (12%)	14 (16%)	3 (50%)
Species composition, abundance and/or biomass (spatial and temporal variation)		2 (1%)	1 (0.8%)	6 (7%)	
Population growth			<1%		
				Habitats, ecosystem structure, functions and processes	
Number of findings				114	
Species composition, abundance and/ or biomass				36 (32%)	
Physical, hydrological and chemical characteristics				25 (22%)	
Seabed substrate and morphology				15 (13%)	
Wave and current regimes				9 (8%)	
Turbidity and transparency				7 (6%)	
Habitat distribution and extent				4 (4%)	
Habitat for the species				4 (4%)	
Other indicators				14 (12%)	

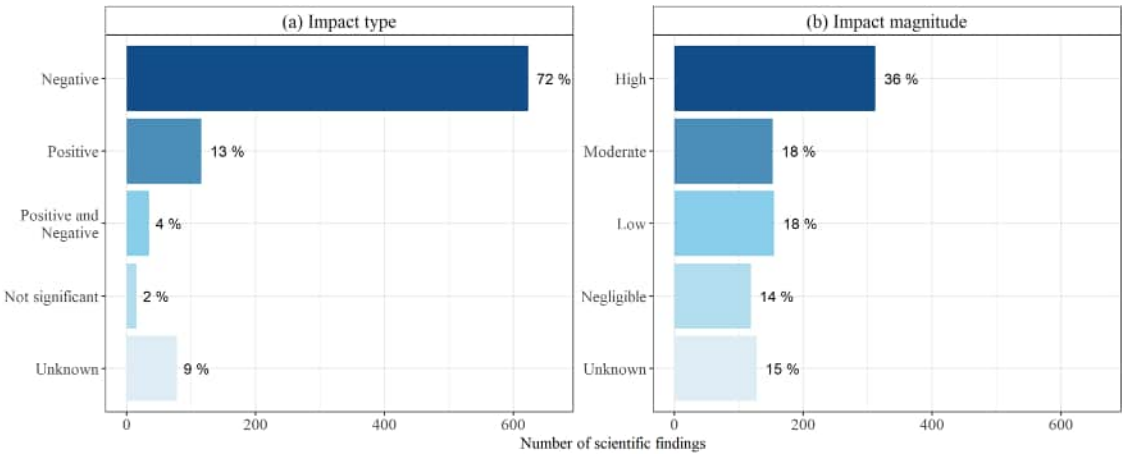

Fig. 3 Proportion of scientific findings about the impacts of wind energy devices on marine ecosystems. The information is classified according to impact type (**a**) and magnitude of the impact (**b**). ESFP ecosystem structure, functions, and processes.

developments and the high density of wind turbines may hinder the achievement of good environmental status for biodiversity or seafloor integrity[76,77].

IMPACT TYPE AND MAGNITUDE

Among the 867 findings extracted from the analysed publications, 72% reported negative impacts, while 13% were positive (Fig. 3a). Regarding impact magnitude (either positive or negative), 54% were reported as being high or moderate, while low or negligible impacts accounted for 32% (Fig. 3b). The distribution of impact type and magnitude on each ecosystem element is shown in Fig. 4, while the level of certainty is shown in Supplementary Fig. S4. For instance, the impact type of 'biological disturbance' pressure (row 1) over ecosystem element 'birds' (column 5) is mostly reported as being negative (Fig. 4; red-coloured bars). There is also a high degree of scientific consensus (see Supplementary Fig. S4; row 1, column 5, left bar). Conversely, impact magnitude is more evenly distributed among classes (Fig. 4; row 1, column 5, green-coloured bars) and, therefore, certainty is lower (Supplementary Fig. S4; row 1, column 5, right bar). Note that the number of analyses found in literature plays an important role in certainty interpretation (e.g., when only one paper describes the impact and magnitude of a pressure type on an ecosystem element, interpretation must be cautious). Supplementary Figs. 5–20 present detailed information on the assessed ecosystem element indicators per group.

The relatively high degree of agreement regarding impact type (e.g., positive, negative) of wind devices on ecosystem elements is noteworthy. By contrast, certainty regarding impact magnitude is

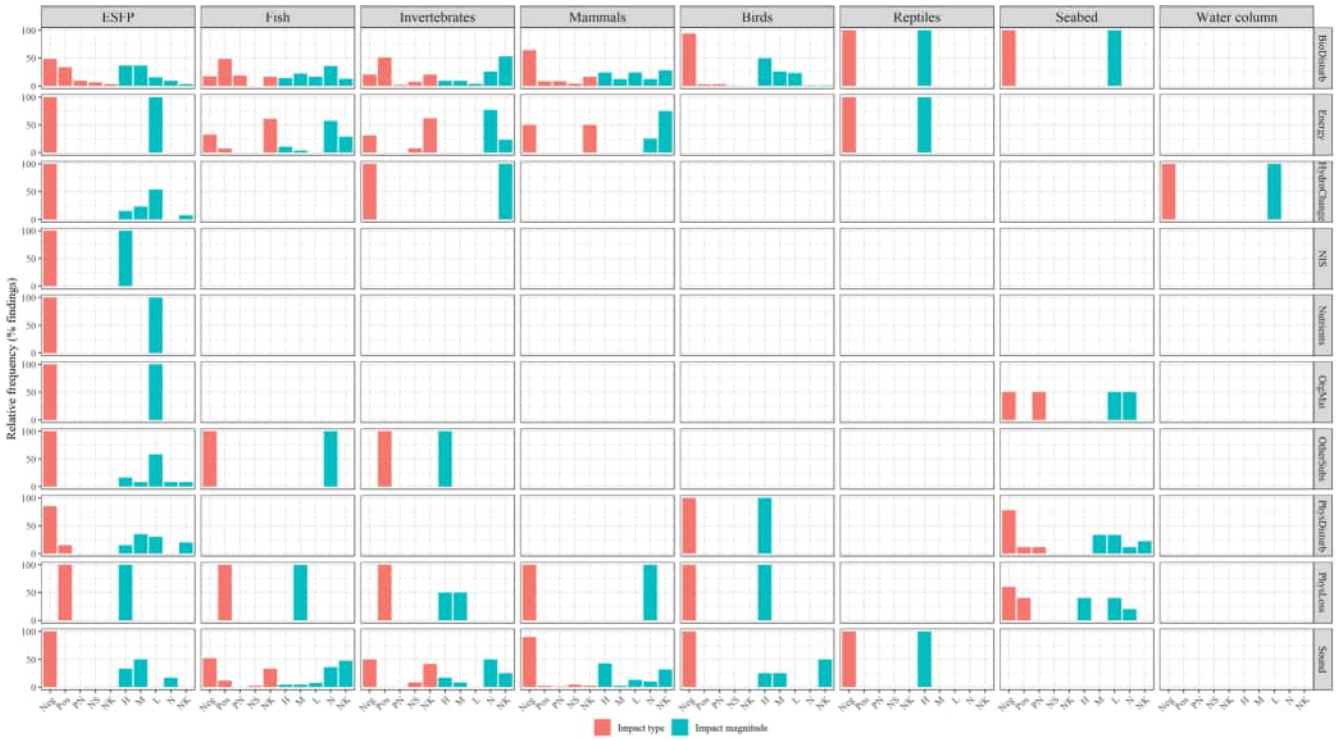

Fig. 4 Impact type and magnitude of wind energy devices for each pressure over each ecosystem element based on information extracted from the systematic literature review. The intersection between a pressure type (rows) and an ecosystem element (column) shows the relative frequencies of each impact type (red), and magnitude (green). ESFP ecosystem structure, function, and processes, Neg negative, Pos positive, PN positive and negative, NS not significant, NK unknown, H high, M medium, L low, N negligible.

relatively low, especially for marine mammals and ecosystem structure, functions, and processes. This highlights the lack of empirical evidence needed to assess impact magnitude and, hence, the full ecological risks associated with OWFs (Supplementary Table 11).

For all ecosystem components together, high-moderate negative impacts accounted for 45% of the findings (Supplementary Table 12), 32% of which referred to effects on birds. Negative impacts are associated with changes in bird abundance due to collision mortality and displacement, changes in distribution patterns, and alteration of behaviour to avoid OWFs[78–80] (Supplementary Table 5). Species differed greatly in their sensitivity to pressures, with different responses depending on their ecology (i.e., flight altitude, season, sex). In turn, only 1% of the findings reported high-moderate positive impacts on birds (e.g., attraction behaviour toward OWFs by gulls or cormorants)[47,71].

As for marine mammals, up to 7% of the findings referred to negative impacts, depending on the OWF development phase. Pile driving can have a significant impact on mammal's abundance and distribution (e.g., avoidance behaviour with porpoises temporarily leaving the construction area)[53,81]. By contrast, 0.5% of the findings reported positive effects. It has been reported that the abundance of harbour porpoises increased after construction ended, with animals using the OWFs more frequently than reference areas[45]. This is potentially related to food availability due to reduced fishing, artificial reef effects, and the absence of vessels.

In what regards fish, over 2% of the findings reported high-moderate negative impacts. The magnitude of such impacts depends on the affected species and its level of vulnerability/sensitivity, with potentially more severe effects for elasmobranchs[30,50]. The same percentage of findings reported high-moderate positive impacts related to shelter (against currents and predators) and food availability, stimulating aggregation behaviour[45,82]. OWFs may act as fish aggregation devices, with spill-over effects. Fish species from rocky environments were more abundant close to OWFs than those from sedimentary environments[54,83].

IMPLICATIONS FOR MANAGEMENT AND DECISION MAKING

One of the most relevant non-technical barriers affecting the expansion of the offshore renewable energy sector is the potential environmental risk (and related uncertainties)[84,85]. The latter entails significant repercussions in the promptness of the consent process and associated economic costs[86].

Legal frameworks are emerging worldwide to support sustainable exploitation of marine resources while preserving healthy and functioning ecosystems[87,88]. Among other instruments, Strategic Environmental Assessments (SEAs) and Environmental Impact Assessments (EIAs) are used globally to manage the environmental impacts of human activities and identify projects risks[89–92] to avoid adverse effects and adopt mitigation and compensation measures[93]. Updated, integrative, and systematic scientific information on the risk of each potential interaction between OWFs and different ecosystem elements is needed to inform managers and decision-makers during OWE planning[14,92,94–96]. It is valuable information for designing monitoring programmes at the project location (particularly those focused on ecosystem elements with higher vulnerability to the pressures produced by the wind turbines) and implementing mitigation measures in the context of the consent processes[97].

This review is not intended to question the potential of OWE production as a credible source of clean and renewable energy, with its direct and indirect economic, social, and environmental benefits. Instead, it intends to highlight the potential ecological effects that the sector's expansion will cause at local and regional scales. While legislation to reduce local impacts of OWE is necessary, it must be proportionate and weighed against the global environmental, social, and economic benefits that derive from reducing fossil-fuel emissions[98].

A WAY FORWARD

Structured and science-based information such as the one presented in this review is vital to anticipate ecological impacts and adopt mitigation measures[43], ensuring that the OWE sector is environmentally sustainable. Still, we must acknowledge that there are significant scientific discrepancies regarding the magnitude of OWE impacts, as highlighted by the lack of evidence on the assessment of ecological risks associated to OWE projects. Moreover, most publications are derived from studies conducted at more localized scales (e.g., in shallow waters, close to the coast, with few turbines, low production capacity, and occupying a small area). The acquisition of new data through dedicated monitoring activities around OWE developments is, therefore, highly relevant to overcome scientific knowledge gaps —being, in turn, of high value to policymakers, managers, decision-makers, and industry. Monitoring processes need to focus on pressures and impacts on specific ecosystem elements (including protected and vulnerable habitats and species) for which higher uncertainty has been identified. Another important aspect to consider is the limited number of scientific studies addressing the environmental impacts of multiple pressures produced by wind turbines. Assessments of cumulative pressures and impacts of OWFs and other existing maritime activities must be further promoted, as multiple human activities will continue to take place in the same areas as OWFs being likely to exacerbate environmental impacts. The limited number of studies addressing with impacts on ecosystem services must also be emphasised[42,99,100]. More in-depth analyses on OWFs effects on the provision of ecosystem services will potentially highlight unknown impacts affecting (positively or negatively) other maritime sectors operating in surrounding areas.

The progressive expansion of OWFs to meet energy production objectives, including floating devices in deeper areas and farther offshore[8,43], faces relevant technical, economic, social, and ecological concerns worldwide. Among other challenges, it will add to and be affected by the increasing demand for ocean space[101,102]. Interactions with other traditional and strategic human uses of the ocean need to be considered in order to avoid, or at least minimise, spatial conflicts[103]. A future perspective on this topic includes using integrative approaches to gather relevant information, thereby providing a holistic view of the positive and negative impacts, and of the trade-offs between different management options. These approaches include the development of tools for ecological risk assessment of OWE projects[104] and the implementation of machine-learning and modelling approaches (such as Bayesian networks)[105]. Such tools are to be further integrated into decision-support tools[106–108] to identify future deployment areas, inform the consent process, and contribute to making the OWE sector more environmentally sustainable.

DATA AVAILABILITY

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

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I.G.: conceptualization, methodology, formal analysis, investigation, writing—original draft, writing—review and editing, visualization, supervision, project administration and funding acquisition. I.M.: investigation, review and editing. J.M.G.: investigation, review and editing. Á.B.: conceptualization, investigation, writing—original draft, writing—review and editing, visualization. A.D.M.: formal analysis, writing—original draft, writing—review and editing, visualisation. G.I.: writing—review and editing. J.B.: writing—review and editing and funding acquisition.

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