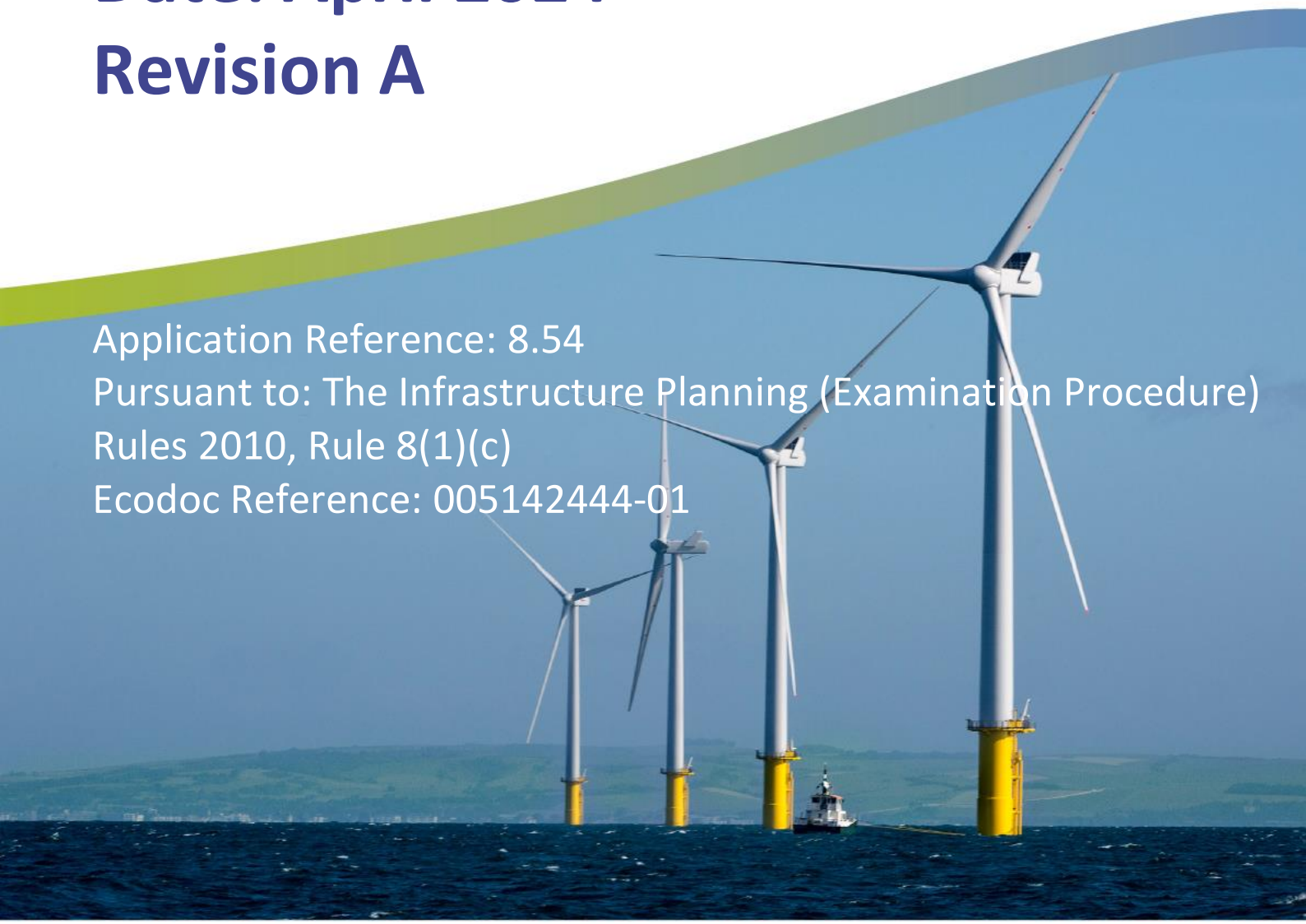
Rampion 2 WIND FARM

Rampion 2 Wind Farm

8.54 Applicant's Responses to Examining Authority's First Written Questions (ExQ1)

Date: April 2024

Revision A



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Executive Summary

On 3 April 2024, the Examining Authority's first Written Questions **[PD-009]** and requests for information were released. The Examining Authority's Written Questions are set out using an issue-based framework and outlined who the question was directed to (i.e. the Applicant or an Interested Party).

Rampion Extension Development Limited (the 'Applicant') has taken the opportunity to review each of the questions received from the Examining Authority. This document provides the Applicant's responses and has been submitted for Examination Deadline 3.

1. Introduction

1.1 Project overview

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

1.1.2 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 The Examining Authority published the Examining Authority's first Written Questions **[PD-009]** and requests for information on 3 April 2024 in accordance with the Examination timetable provided in the Rule 8 letter **[PD-007]**. The Examining Authority's Written Questions are set out using an issue-based framework and outline who each question was directed to (i.e. the Applicant or an Interested Party).

1.2.2 The Applicant has taken the opportunity to review the Examining Authority's Written Questions received and this document provides the Applicant's responses.

1.3 Structure of the Applicant's Responses

1.3.1 The Applicant has structured this document to following the issue-based approach used by the Examining Authority. The Applicant has separated each issue category (i.e. Alternatives) into separate tables for ease of referencing. Each table row contains a unique reference number as provided in the Examining Authority's Written Questions **[PD-009]**, grey rows indicated questions not directed to the Applicant. The Examining Authority raised 259 questions in total and **Table 1-1** provides an overview of the number of questions that were directed to each Interested Party.

Table 1-1 Overview of Examining Authority's Questions

Category	Interested Party	Questions directed towards
Applicant	The Applicant	158
Local Planning Authorities	West Sussex County Council	26
	Arun District Council	16
	Horsham District Council	24
	Mid Sussex District Council	7
	South Downs National Park Authority	22
	Brighton & Hove City Council	1
	Relevant Planning Authorities	5
	Local Authorities	1
Parish Councils	Clymping Parish Council	1
Prescribed Consultees	The Environmental Agency	28
	Historic England	3
	Marine Management Organisation	20
	Natural England	62
Affected Parties	Affected Persons, Interested Parties	1
	Lester Aldridge LLP on behalf of Thomas Ralph Dickson	1
	National Grid Electricity Transmission	3
	National Highways	3
	National Trust	1
	Network Rail	1
	Southern Water	1
Non-Prescribed Consultees	Brighton City Airport	1
	Forestry Commission	3
	Ministry of Defence	1

Category	Interested Party	Questions directed towards
	National Air Traffic Services	1
	Sussex Inshore Fisheries and Conservation Authority	1
	Sussex Wildlife Trust	1
	The Woodland Trust	2

1.3.2 The Applicant has provided a response to all of the Examining Authority Questions directed to the Applicant. In addition to this, the Applicant has also provided a response to some questions that were directed at Interested Parties where the Applicant considers additional information would be useful for the Examining Authority.

1.3.3 The issue-based questions for the Examining Authority Written Questions are structured in these tables below:

<u>Onshore and offshore questions</u>

- Alternatives (AL): **Table 2-1**;
- Habitats Regulations Assessment (HRA): **Table 2-2**;
- Construction, Operation and Decommissioning Matters (COD): **Table 2-3**;
- Draft Development Consent Order (Draft DCO) and Draft Deemed Marine Licence (Draft DML) (DCO): **Table 2-4**; and
- Land Rights (LR): **Table 2-5**.

<u>Onshore questions</u>

- Air Quality (AQ): **Table 2-6**;
- Biodiversity (BD): **Table 2-7**;
- Climate Change (CC): **Table 2-8**;
- Design (DE): **Table 2-9**;
- Flood Risk (FR): **Table 2-10**;
- Historic Environment (HE): **Table 2-11**;
- Minerals (MI): **Table 2-12**;
- Noise and Vibration (NV): **Table 2-13**;
- Public Health (PH): **Table 2-14**;
- Seascape and Landscape and Visual (SLV): **Table 2-15**;
- Soils and Agriculture (SA): **Table 2-16**;

- Traffic and Access (TA): **Table 2-17**;
- Terrestrial Ecology (TE): **Table 2-18**; and
- Water Environment (WE): **Table 2-19**.

Offshore questions

- Fish and Shellfish (FS): **Table 2-20**;
- Benthic and Offshore Processes (BP): **Table 2-21**;
- Marine Mammals (MM): **Table 2-22**;
- Offshore and Intertidal Ornithology (excluding questions involving HRA which are in the HRA section of this document) (OR): **Table 2-23**;
- Aviation (AV): **Table 2-24**; and
- Commercial Fishing and Fisheries (CF): **Table 2-25**.

1.3.4 Further to this, a number of appendices have been prepared to provide more detailed information to respond to Examining Authority Questions where required and they are included at the end of this document. The appendices include:

- **Appendix A HRA: Rampion 2 HRA screening** (to support Written Question reference HR 1.10);
- **Appendix B LR: Changes further to Affected Persons representations** (to support Written Question reference LR 1.8, LR 1.10, and LR 1.13);
- **Appendix C LR: Letter to Mr Lester Aldridge - 21.03.24** (to support Written Question reference LR 1.16);
- **Appendix D LR: SDNP_NH Overlay Plan** (to support Written Question reference LR 1.22);
- **Appendix E FR: Oakendene Flood Ris**k (to support Written Question reference FR 1.2, FR 1.3, and FR 1.4);
- **Appendix F SLV: Examples of Permitted NSIPs affecting special qualities and statutory purpose of national landscapes** (to support Written Question reference SLV 1.5);
- **Appendix G TE: Seasonal restrictions for construction due to terrestrial ecology commitments** (to support Written Question reference TE 1.28);
- **Appendix H FS: Noise Thresholds for Black Seabream** (to support Written Question reference FS 1.5); and
- **Appendix I MM: Noise Abatement Systems** (to support Written Question reference MM 1.3 and MM 1.8).

2. Applicant's Response to Examining Authority's Written Questions

Table 2-1 Alternatives

Ref	Question To:	Question	Applicant's Response
AL 1.1	Natural England The Environment Agency	*Fawley and Dungeness Alternatives* Respond specifically to the identified environmental challenges of offshore cabling to the Fawley substation as identified in paragraphs 1.3.10 to 1.3.14, and to Dungeness substation as identified in paragraphs 1.3.19 to 1.3.29 of the Applicant's post-Hearing submission on Fawley and Dungeness appraisals [REP1-019].	
AL 1.2	The Applicant	*Fawley and Dungeness Alternatives* Further to the Applicant's post-Hearing submission on Fawley and Dungeness appraisals [REP1-019], explain the constraint, if any, to the identified "Inshore Traffic Zone" and whether this would have any bearing on construction of a cable route to Dungeness.	The Applicant notes that, whilst the Convention on the International Regulations for Preventing Collisions at Sea (COLREGS) (1972) makes allowances for cable installation with International Maritime Organisation (IMO) routeing measures, which include the Dover Strait Inshore Traffic Zone (ITZ), as well as for transits to/from any place/structure within the ITZ, the placement of such infrastructure within the ITZ area would likely require the instigation of traffic management liaison with the Channel Navigation Information Service (CNIS). In addition, during consultation with relevant stakeholders, notably the Maritime and Coastguard Agency and Trinity House as part of the design evolution of the Proposed Development, it was highlighted that overlap of the proposed DCO Order Limits with the ITZ would be a concern (paragraph 13.3.10 of **Chapter 13: Shipping and navigation, Volume 2** of the Environmental Statement (ES) **[APP-054]**). In response to this, and the consultation responses from the Chamber of Shipping in relation to the lack of 'exceptional circumstances' needed to allow infrastructure to be placed within the ITZ area required under Policy S-PS-2 of the South Marine Plan (Department for Environment, Food and Rural Affairs (Defra), 2018), the Applicant reduced the proposed DCO Order Limits to avoid any overlap with the ITZ, as noted in **Chapter 13: Shipping and navigation, Volume 2** of the ES **[APP-054]** and **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**. The Applicant considers that, even though the ITZ area does not represent a hard constraint on the installation of cables, the availability of other, notably shorter, offshore routes for the export of electricity generated by the Proposed Development to an onshore grid connection, supports the decision not to progress further evaluation of a connection to Dungeness in line with the rationale set out within **Deadline 1 Submission – 8.25.1 Applicant's Post Hearing Submission – Issue Specific Hearing 1 Appendix 1: Further information for Action Point 3 – Fawley and Dungeness [REP1-019]**.
AL 1.3	National Grid Electricity Transmission (National Grid)	*Bolney Substation* Confirm the Applicant explanation of the process of selecting the preferred substation at Bolney for the grid connection for the Proposed Development at Bolney as set out in ES Chapter 3 [APP-044] and within section 1.3 of the Applicant's post-Hearing submission on Fawley and Dungeness appraisals [REP1-019].	

Table 2-2 Habitats Regulations Assessment

Ref	Question To:	Question	Applicant's Response
HRA 1.1	Natural England	*Updated Kittiwake Implementation and Monitoring Plan* The ExA notes the intention for the Applicant to provide Artificial Nesting Structures (ANS) for kittiwake as part of the Kittiwake Implementation and Monitoring Plan (KIMP), in the event that the SoS concludes that adverse effects on the integrity of the Flamborough and Filey Coast Special Protection Area cannot be excluded. Regarding the Applicant's updated Kittiwake Implementation and Monitoring Plan (KIMP) submitted into the Examination at Deadline 1 [REP1-026], state whether: a) The Applicant has adequately explained how it would develop the collaborative option for delivering the ANS. b) The proposed monitoring programme, adaptive management and reporting timeframes the Applicant is proposing are adequate. c) The requirement securing the KIMP in the draft Development Consent Order (draft DCO) [REP2-002] is adequate.	
HRA 1.2	The Applicant	*Updated Kittiwake Implementation and Monitoring Plan and Offshore Ornithology Engagement Group* Natural England provided advice to the Applicant at Deadline 2 [REP2-037] regarding the methodology to calculate requirements for compensation for kittiwake. a) Calculate requirements for compensation for kittiwake in line with Natural England's advice and compare to the estimate previously provided. b) Explain whether the Kittiwake Implementation and Monitoring Plan (KIMP) will be updated to incorporate the compensation quantum following Natural England's advised method. c) Respond to the advice provided by Natural England at Deadline 2 [REP2-037] to set up a single Offshore Ornithology Engagement Group (OOEG) covering all projects dependent on the kittiwake tower. d) Respond to Natural England's advice at Deadline 2 [REP2-037] to provide details and explanation of which colonies will be monitored as part of the creation of a baseline.	a) The Applicant will use the Natural England advice to estimate the compensation quantum and present it alongside the Applicants approach. An updated **Kittiwake Implementation and Monitoring Plan (KIMP) (Document Reference 8.64)** has been provided at Deadline 3. b) The Applicant has updated **Kittiwake Implementation and Monitoring Plan (KIMP) (Document Reference 8.64)** at deadline 3 with the compensation quantum following the Natural England's advised method. c) The Applicant will collaborate with other RWE projects proposing to utilise the tower as a compensation measure for kittiwakes by setting up a one Offshore Ornithology Engagement Group (OOEG) to represent all projects. The locations that will be monitored are the Leonardo Hotel, Saltmeadows Kittiwake Tower, Baltic Arts Centre, Tyne Bridge and Howick cliffs. This is in line with the monitoring carried out by RWE Dogger Bank South in 2023 for the Kittiwakery Tower at Gateshead. Additional sites could be incorporated if considered appropriate by the OOEG.
HRA 1.3	Natural England	*In-combination Assessment of Impacts for Guillemot and Razorbill at the Flamborough and Filey Coast SPA* Comment on the adequacy of the Applicant's full in-combination assessment of impacts for guillemot and razorbill at the Flamborough and Filey Coast (FFC) SPA submitted at Deadline	

Ref	Question To:	Question	Applicant's Response
		1 [REP1-027], specifically whether Natural England agrees with the Applicant's methodology and conclusions.	
HRA 1.4	Natural England	*In-combination Assessment of Impacts for Guillemot at the Farne Islands SPA* Comment on the adequacy of the Applicant's full in-combination assessment of impacts for guillemot at the Farne Islands SPA submitted at Deadline 1 [REP1-027], specifically whether Natural England agrees with the Applicant's methodology and conclusions.	
HRA 1.5	The Applicant	*Great Black-backed Gull Littoral Seino-Marin SPA* Provide an update on discussions with the French Authorities related to the potential impact on the great black-backed gull at the Littoral Seino-Marin SPA in France. Provide details of any areas of disagreement or potential areas of disagreement.	The Applicant contacted the French Authorities on February 23rd to discuss further the Applicant's assessment conclusions with respect to French Special Protection Areas (SPAs), with particular reference to the great black-backed gull feature of Littoral Seino-Marin SPA. At the time of drafting this response, the Applicant has yet to receive a response from French Authorities, though will keep the Examining Authority updated if and when a response is received.
HRA 1.6	The Applicant	*Great Black-backed Gull UK South-west & Channel BDMPS Regions* a) Respond to Natural England's comments at Deadline 2 [REP2-040] on the Applicant's updated approach to assessing the potential cumulative impact on the great black-backed gull within the UK South-west & Channel BDMPS regions, specifically comment on Natural England's comments on the Applicant's: i. Revised approach collision risk modelling [REP1-038]. ii. Calculation of the breeding season population. iii. Inclusion of overseas birds. iv. Calculation of the Southwest UK and Channel breeding season reference population to include colonies in the west of Scotland. b) Respond to Natural England's recommendation [REP2-040] to use the non-breeding season BDMPS population scale to more accurately reflect the potential cumulative effects on the relevant population.	As noted within Natural England's comments at Deadline 2 **[REP2-040]**, Natural England intend to fully review and respond to the Applicant's report **Deadline 1 Submission – 8.36 Great black-backed gull assessment sensitivity** **[REP1-038]** at Deadline 3. The Applicant is unsure as to where Natural England are suggesting there has been a deviation from guidance within the **Deadline 1 Submission – 8.36 Great black-backed gull assessment sensitivity** **[REP1-038] [REP1-038]**. Natural England's comment refers to Biologically Defined Minimum Population Scales (BDMPS) population size definitions, however no reference to BDMPS populations is made within **Deadline 1 Submission – 8.36 Great black-backed gull assessment sensitivity** **[REP1-038] [REP1-038]**, nor has the Applicant presented any updated cumulative assessments within the report **[REP1-038]**. The Applicant will await receipt of Natural England's written responses at Deadline 3 and seek further clarification on these points if required.
HRA 1.7	Natural England	*Potential for Adverse Effect on Integrity (AEoI) to the Conservation Objectives of the Northern Pintail of the Arun Valley Ramsar site* In light of the Applicant's responses at Deadline 1 [REP1-017] to Natural England's concerns [RR-265] regarding the foraging range of the northern pintail, potential impacts from habitat fragmentation and potential temporary loss of functionally linked land of the Arun Valley Ramsar site, state:	The Applicant notes that this question is for Natural England. However, the Applicant's position is summarised below: 1. Potentially functionally linked land within the Arun and Adur Valleys is within the longer foraging ranges for northern pintail using flight distances from examples in the United States

Ref	Question To:	Question	Applicant's Response
		a) Whether the Applicant's responses address Natural England's concerns. b) What further assessment and / or mitigation is the Applicant advised to undertake / implement to address Natural England's concerns.	(Johnson et al. 2014), but not within the flight distance provided for the single European example or for the mean or median distances for all quoted examples. 2. Northern pintail was only recorded in functionally linked land infrequently and in small numbers. 3. The distance between the Arun Valley SPA and Ramsar site and potential functionally linked land crossed by the cable route is large (over 9km in the Arun Valley and 13km in the Adur valley). These elements together suggest that northern pintail will not be affected adversely by the installation of cable ducts due to the separation distance between the designated site and areas of interest and the low level, sporadic usage of these areas by this species.
HRA 1.8	Natural England	*Water Neutrality and Potential Likely Significant Effects on the Arun Valley designated sites (SPA, SAC and Ramsar)* There is no change on the level of concern in Natural England's Risk and Issue log submitted at Deadline 2 [REP2-041] related to Water Neutrality within the Sussex North Water Supply Zone, in light of the Applicant's further information on this provided at Deadline 1. State: a) Natural England's latest position on the Applicant's proposed actions submitted into the examination at Deadline 1 to address Water Neutrality, and whether they are sufficient. b) What further assessment and / or mitigation the Applicant is advised to undertake / implement to address your concerns.	The Applicant notes that this question is for Natural England. However, the Applicant's position is summarised below: • No water from within the Sussex North Water Supply Zone will be used during construction; • Operational need will be limited at the unmanned onshore substation; and • A range of identified mitigation measures have been identified that can ensure water neutrality. Requirement 8 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3) secures the delivery of water neutrality.
HRA 1.9	The Applicant Natural England	*Research Findings* The Report to Inform the Appropriate Assessment (RIAA) [APP-038] contains an extensive list of references listed in section 13. Explain whether any relevant references been published subsequently that should be taken into account in the HRA that might materially change the outcome.	MacArthurGreen (2023). Beatrice Offshore Wind Farm. Year 2 Post-construction Monitoring report. & Trinder, M., O'Brien, S. and Deimel, J., (provisionally accepted). A new method for quantifying redistribution of seabirds within operational offshore wind farms shows no within-wind farm displacement. Frontiers in Marine Science, 11, p.1235061. The results of the second year of post construction monitoring for Beatrice Offshore Wind Farm (OWF) was made public shortly after the Project's application submission. The results presented within the post-construction monitoring report and accompanying published research article provide further empirical evidence that auk species show little to no behavioural response to the presence of an operational OWF. The results presented further support the conclusions drawn from APEM (2022) on auk distributional responses to OWF developments, which suggests that the upper range of displacement and consequent mortality recommended by Natural England of 70% displacement and 10% mortality does not appropriately characterise this species behavioural response to the presence of an OWF development.

Ref	Question To:	Question	Applicant's Response
HRA 1.10	The Applicant	*The RIAA - HRA Screening One* The RIAA [APP-038] frequently refers to the HRA Screening One (RED 2020). The ExA requests that the Applicant submits this document to the Examination.	The Applicant's HRA Screening Report has been included within **Appendix A HRA: Rampion 2 HRA screening** (of this document).

Table 2-3 Construction, Operation and Decommissioning Matters

Ref	Question To:	Question	Applicant's Response
COD 1.1	Natural England Environment Agency Forestry Commission South Downs National Park Authority (SDNPA) The Woodland Trust Sussex Wildlife Trust West Sussex County Council (West Sussex CC) Horsham District Council (Horsham DC) Arun District Council (Arun DC)	*Commitments Register* *Horizontal Directional Drilling (HDD)* Provide a response to the Applicant's statement in the Applicant's Responses to Relevant Representations, J3 [REP1-017] on page 416 that: "*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*." Explain whether there are any remaining concerns on the reliance on HDD or other trenchless technology at the locations specified by the Applicant in the Crossing Schedule in Appendix A of the Outline of Construction Practice [PEPD-033] to be secured via Required 22 within the Draft DCO [REP2-002].	The Applicant recognises that this question is directed at Interested Parties but notes the following. The commitment to trenchless crossings has been provided to seek to avoid impacts on features such as roads, rail, rivers as well as in places of environmental sensitivity. Further embedded environmental measures and Development Consent Order (DCO) Requirements have been provided in the DCO Application to address residual concerns of stakeholders around the use of trenchless crossings which are summarised as follows: • Further ground investigation to inform detailed design of trenchless crossings including measures reducing any risk of frac out of drilling fluids, as described in Section 3.4 of the **Outline Construction Method Statement** **[APP-255]** is secured by Requirement 23 in the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). See also commitments C-234, C-235, and C-236 in the **Commitments Register** **[REP1-015]** (updated at Deadline 3); and • Depths of trenchless crossings below sensitive features including 6m below veteran trees (C-174) and Ancient Woodland (C-216) and crossing of the Climping Beach Site of Special Scientific Interest at a minimum of 5m depth as per the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3), are secured by Requirement 22 in the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3).
COD 1.2	The Applicant	*Commitments Register - Other Trenchless Technology* The phrase '*HDD or other trenchless technology*' is used in C-5, C-123 and C-124 within the Commitment Register [REP1-015]. Clarify what other trenchless technology could be utilised instead of HDD and how these have been assessed in the Environmental Statement (ES).	The Environmental Statement (ES) has assessed the use of horizontal directional drilling (HDD) as the realistic worst case scenario at each of the trenchless crossing locations identified in Appendix A of the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3). This is as per paragraph 4.5.26 of **Chapter 4: The Proposed Development, Volume 2** of the Environmental Statement (ES) **[APP-045]** which 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.*" Paragraph 3.9.19 to 3.9.25 of **Chapter 3: Alternatives Volume 2** of the ES **[APP-044]** provides further consideration of alternatives such as auger bore and micro-tunnelling that were considered and concludes that HDD is the preferred option and provides the realistic worst-case scenario.

Ref	Question To:	Question	Applicant's Response
			Trenchless crossing method selection and final crossing design will be undertaken based on ground investigation and survey data in coordination with the principal contractor. Typical key parameters considered in determining the preferred trenchless method for proposed crossings include: crossing length, crossing depth, crossing alignment, ground conditions, hydrogeology, limitations associated with electrical cable design (i.e., maximum depths and minimum spacings) and limitations imposed by asset owner specifications (e.g., maximum allowable settlement and vibration) over the crossing locations. In the event an alternative trenchless crossing method is required, this could include methods such as direct pipe or pipe-jacking. This would be subject to confirmation accompanying the stage specific CoCP that this remains within the parameters assessed in the Environmental Statement and that there are no materially new or different worse environmental effects. The Applicant notes that detailed design of crossings of assets will also be subject to agreement with the asset owners such as Network Rail, National Highways, Southern Gas Networks in accordance with the Protective Provisions set out Schedule 10 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). There is the need to retain some flexibility within the Development Consent Order (DCO) in the event agreement cannot be reached with an asset owner during detailed design. Any alternative solution would still be subject to the requirements of the DCO and demonstration that there are no new or materially worse environmental effects than those assessed in the ES.
COD 1.3	The Applicant	*Commitments Register - Other Commitments* In its Local Impact Report (LIR) [REP1-044], Horsham DC set out comments and concerns in respect to a number of Commitments and have suggested eight additional Commitments to be used. Provide a response and amend accordingly.	The table below provides the original commitments requested and the Applicant's response on each. Where an update to the DCO Application documents has been made this is noted against each response.

No.	Additional Commitments Sought	Applicant's Response
1	Updated Outline CoCP to include baseline noise surveys, updated noise assessments, noise and vibration monitoring and core working hours specific to the use of the construction compounds and for the exact positioning of the concrete batching plant and soil/aggregate stockpiles and be placed as far away as possible from residents/other sensitive receptors. Such noise surveys,	1. The Applicant has provided an **Outline Noise and Vibration Management Plan** (**Document reference: 8.60**) at Deadline 3 which provides further information on noise and vibration monitoring and updated assessments that would inform the stage specific Noise and Vibration Management Plan to be provided in accordance with Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). The exact positioning of soil stockpiles and batching plant is subject to appointment of a Contractor and detailed design, and will be specified in the stage specific Code of Construction Practice to be provided in accordance with Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). This will be undertaken in accordance with the Outline CoCP Sections 5.3 to, "*Plan site layout so that machinery and dust causing activities are located away from*

Ref	Question To:	Question		Applicant's Response	
				assessment, mitigation and monitoring should be agreed with HDC	*receptors, as far as is possible*" and Section 5.4 which includes application of Best Practicable Means including, "*locating noisy temporary plant so that it is screened where possible from receptors by on-site structures, such as site cabins and other structures.*"
			2	Trenchless crossings investigations should be concluded prior to the commencement of the construction phase to allow for greater scope to avoid potential adverse environmental effects	2. Ground investigation is required to inform detailed design of trenchless crossings prior to construction, this is confirmed in Section 2.11 of the **Outline Construction Method Statement [APP-255]** secured by Requirement 23 in the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3) and will inform the stage specific construction method statements.
			3	Delivering biodiversity net gain specifically within Horsham district and for this to be demonstrated through a biodiversity net gain assessment at district level and a maintenance and monitoring plan of biodiversity net gain (to be agreed and secured with HDC via appropriate means).	3. **Appendix 22.15: Biodiversity Net Gain Information, Volume 3** of the ES **[APP-193]** has been updated at Deadline 3 with a breakdown of BNG calculations by local planning authority area. This provides Horsham District Council and others an understanding of the level of losses and gains to biodiversity delivered by the Proposed Development and the level of additional biodiversity units required to reach both a point of no net loss and biodiversity net gain. Requirement 14 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3) ensures that stage specific biodiversity net gain strategy is provided for approval by the relevant local planning authority in consultation with the statutory nature conservation body. This provides each local authority with a good degree of control over where biodiversity units will be provided, giving the secured driver for local delivery.
			4	Preparing and submitting to HDC for approval a Construction Communications Plan for the communities of Washington and Cowfold.	4. The **Draft Development Consent Order [REP2-002]** (updated at Deadline 3) has been updated to include a requirement for the provision of a Construction Communication Plan to the relevant planning authorities for approval.
			5	Timetable schedule of pre-construction surveys of protected species	5. Protected species surveys would be undertaken during the seasons required by relevant guidance and the outcomes reported in the stage specific Biodiversity Management Plan, as per Requirement 22 (5) (g) of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3).

Ref	Question To:	Question	Applicant's Response		
			6	Advanced planting at Oakendene Substation site, including landscape and visual mitigation including bellmouth and historic parkland tree planting as mitigation	The **Design and Access Statement** **[AS-003]** has been updated at Deadline 3 to include further details of the location and timing of advance planting including provision of historic parkland trees in the first available planting season following commencement.
			7	Prior to undertaking any essential night-time working, the timing and duration and monitoring of such works will be approved with HDC through an agreed process to be included in the CoCP	The Applicant has provided an **Outline Noise and Vibration Management Plan** (**Document reference: 8.60**) at Deadline 3 which provides further information on noise and vibration monitoring, with further detail to be provided in the stage specific NVMP in accordance with Requirement 22 (4) (h) of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3).
			8	Applicant to commit that core working hours, including HDD drilling, for Washington Compound be restricted to Monday to Friday 08:00 to 19:00 hours and Saturday 09:00 to 13:00 hours	The Applicant has updated the core working hours in C-22 in the **Commitments Register** **[REP1-015]** (updated at Deadline 3) and Section 4.4 of the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) as secured by Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). The hours have been updated to 08:00 to 18:00 Monday to Friday with 'shoulder hours' and 08:00 to 13:00 on Saturday. These hours will apply to the operation of the Washington Compound except during trenchless crossing (such as horizontal directional drill (HDD)) drilling. The Applicant notes that HDD requires continuous working (up to 24 hours, 7 days per week) as per paragraph 4.4.3 of the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3).
COD 1.4	The Applicant	*Phasing/Stages Plan* Horsham DC [REP1-044], Arun DC [REP1-039] and West Sussex CC [REP1-054] and others particularly in respect to Requirement 22 in the draft DCO [REP2-002] have requested further information to identify the individual stages, the timing of construction and phasing within each local authority. In response, the Applicant has amended Requirement 10 of the draft DCO requiring a staging plan. The Applicant also states e.g [REP2-022] that phasing and sequencing of	Requirement 10 in Part 3 of Schedule 1 to the Order requires that programme of stages is to be submitted for approval prior to the commencement of the authorised project and prior to the commencement of any onshore site preparation works. These staging programmes are required to facilitate the submission of control documents on a stage specific basis and so allow the detail of each documents to be tailored to the particular geographical location for, and type of, works being carried out. Once the programmes of stages have been approved by the relevant planning authorities, details as to how the works will be carried out in each particular stage will need to be identified in the relevant control plans (Code of Construction Practice, Landscape and Ecology Management Plan, Construction Method Statement, Construction Traffic Management Plan, Public Rights of Way Management Plan, Biodiversity Net Gain Strategy, Onshore Written Scheme of Investigation) prior to			

Ref	Question To:	Question	Applicant's Response
		works will be secured within the outline Code of Construction Practice (CoCP) [PEPD-033] and the outline Landscape and Ecology Management Plan (LEMP) [APP-232]. The ExA questions why staging and phasing plans appear to be controlled in two places; Requirement 10 and within the CoCP/LEMP. Explain why staging and phasing controls are spread across Requirement 10 and the CoCP/LEMP and what aspects of the stages/phasing plan they are intended to control. Alternatively, consider a revision of Requirement 10 so that it explicitly requires the submission and approval of a staging and phasing plan for each local authority.	commencement. These documents will describe how the works will be undertaken to deliver the relevant stage. The requirements allow for each control document to cover one or more stage as is considered appropriate. For clarity, there is no separate 'phasing plan' between stages, use of this terminology has entered the discourse as stakeholders have used it in their relevant/written responses.
COD 1.5	The Applicant	*Community Benefits Package* West Sussex CC in its LIR [REP1-054] state that it expects to see the Applicant prepare a Community Benefits Package in respect to measures contained within the draft DCO [REP2-002]. In its response e.g [REP2-021], the Applicant states that Community Benefits Packages sit outside of the consenting process and separate to the planning process. The ExA wishes to better understand the purpose of the Community Benefits Package, and what it would, in practice, entail and contain. a) The ExA would like assurance that such matters contained therein are to enhance communities and are not mitigation measures brought about by the Proposed Development. b) Explain whether such Community Benefits Packages will be agreed and signed (albeit not submitted into the Examination) before the close of the Examination so that it can be reported to the Secretary of State. c) Set out which authorities the Applicant is intending to agree Community Benefit Packages with.	a) The Applicant can confirm that the Community Benefits Package will not be for the purpose of supporting projects which directly mitigate the proposed development. The Applicant is currently awaiting publication of the UK Government Guidance expected in June. 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 while taking account of the guidance. The final package may include a range of initiatives to benefit business, education and residential communities**.** b) The UK Government Guidance on Community Benefits for Electricity Transmission Network Infrastructure is not due to be published until June, hence The Applicant is planning to carry out consultation in the second half of 2024 and will therefore not be in a position to agree a Community Benefit Package until after the Examination. Community benefits are not a legal or Development Consent Order (DCO) requirement and are quite distinct from the consent 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.*" c) The Applicant is currently awaiting publication of the UK Government Guidance expected in June, before planning and undertaking the consultation. The current expectation is for the Guidance to put local people and grass roots communities at the heart of identifying how the Community Benefit Package is designed, finalised and delivered. Local authorities, parish councils and voluntary organisations are expected to be part of the consultation process and while the Applicant cannot pre-empt feedback, they will have regard to the outcome of the consultation.

Ref	Question To:	Question	Applicant's Response
COD 1.6	The Applicant	*Risk of Marine Pollution from Maintenance Activities* Operation and maintenance activities are detailed in section 4.8 of Chapter 4 of the ES [APP-045]. This includes consideration of maintenance inspections, painting of the wind turbine generators, cable surveys and foundation inspections. Explain what measures would be taken to avoid any adverse effects from maintenance activities, particularly release of pollutants from activities such as re-painting the WTG. How would these measures be secured in the DCO.	Assessment of the potential for adverse effects arising from the Proposed Development as a result of maintenance works has been undertaken and reported in relevant offshore chapters of the Environmental Statement (ES). The Applicant notes that measures to avoid significant effects arising from offshore maintenance activities, as set out within **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]** and the **Outline Offshore Operations and Maintenance Plan** **[APP-238]**, will principally be delivered through adherence to the controls and provisions set out within the **Outline Project Environmental Management Plan** **[APP-233]** and the **Outline Marine Pollution Contingency Plan** (Appendix A of the **Outline Project Environmental Management Plan** **[APP-233]**). These documents identify aspects including relevant training, environmental awareness and briefings as well as, importantly for activities such as those with the potential for release of pollutants such as re-painting WTGs, appropriate provision for adequate controls for the delivery, storage and use of chemicals (including paints), fuels and oils, in addition to ensuring an appropriate and accurate Control of Substances Hazardous to Health (COSHH) Register including material safety data sheets for all hazardous substances on site. Controls on hazardous materials are set out within Section 4 of the **Outline Project Environmental Management Plan** **[APP-233]**, but include, for example: • selection of chemicals that have the lowest impact to the environment where practicable and volumes of hazardous substances stored to be limited to be fit for purpose and minimise risk; • all contractors shall detail with their environmental management plans specific controls necessary for the delivery, storage and handling of hazardous materials relevant to their works, and in particular oils and fuels, taking into account the requirements of the Control of Pollution (Oil Storage) (England) Regulations (2001); • oils and chemicals must be clearly labelled. A register of hazardous substances shall be kept on site, the register will include the product/substance material safety data sheets; • storage, and use handling of chemicals in line with manufacturer's instructions / recommendations and material safety data sheets guidance, the COSHH Regulations (2002) and regulator guidance on the storage of chemicals; • activities involving the handling of large quantities of hazardous materials, such as deliveries and refuelling will be undertaken by designated and trained personnel; and • secondary containment capacity for substances dangerous to the environment must be 110% of the largest container or 25% of the total volume of accumulated containers (whichever is greatest). Spill kits of sufficient capacity to deal with volumes stored to be fully stocked and readily available. The Applicant notes that the **Outline Marine Pollution Contingency Plan** (Appendix A of the **Outline Project Environmental Management Plan** **[APP-233]**) currently refers solely to the construction phase of the Proposed Development, however the Applicant would highlight that the intention would be to apply the same measures, where applicable, through the operation and maintenance phase and will provide an update to the wording of this document at Deadline 4 to reflect this commitment. The Applicant confirms that measures to avoid significant adverse effects as a result of maintenance phase works, notably including marine pollution, will be delivered through the implementation of the **Outline Project Environmental Management Plan** **[APP-233]** and **Outline Marine Pollution Contingency Plan** are secured through these Plans in Condition 11 of the draft Marine Licences (Schedules 11 and 12 of the **Draft Development Consent Order**) **[REP2-002]** (updated at Deadline 3).

Ref	Question To:	Question	Applicant's Response
COD 1.7	The Applicant MMO Natural England The Environment Agency Relevant Planning Authorities	*Decommissioning* **The Applicant** Provide an Outline Decommissioning Plan for the offshore infrastructure, as requested by Natural England [REP2-038, Page 3]. Explain plans in place to follow the waste hierarchy at the decommissioning stage, particularly any plans on how the wind turbine materials might be reused or recycled.	It is not considered necessary for an Outline Decommissioning Plan to be provided pursuant to the consenting process under the Planning Act 2008, as the decommissioning process for offshore renewable energy installation farms is controlled by the Energy Act 2004. Section 105 of the Energy Act 2004 requires that the Secretary of State may, by notice, require a decommissioning programme for a renewable energy installation, to include the details set out in that section. In reflection of this the **Draft Development Consent Order**) **[REP2-002]** (updated at Deadline 3) provides, at Schedule 1 (the Authorised Project) Part 3 (Requirements), requirement 11, that no offshore works are to commence until a written decommissioning programme in compliance with any notice served upon the undertaker by the Secretary of State pursuant to section 105(2) of the Energy Act 2004 has been submitted to the Secretary of State for approval. This approach is consistent with recently as made offshore wind farm DCOs, including The East Anglia ONE North Offshore Wind Farm Order 2022, The East Anglia TWO Offshore Wind Farm Order 2022 and The Awel y Môr Offshore Wind Farm Order 2023. It is also consistent with the terms of National Policy Statement EN-3 2011 (paragraphs 2.6.53 and 2.6.54).
		The Environment Agency / Natural England / MMO / Relevant Planning Authorities Comment on expectations for recycling or reuse of the wind turbine materials at the decommissioning stage.	

Table 2-4 Draft Development Consent Order (Draft DCO) and Draft Deemed Marine Licence (Draft DML)

Ref	Question To:	Question	Applicant's Response
DCO 1.1	The Applicant	*General* Provide an up-to-date list of made Orders which the Applicant is citing/referencing in the preparation of the draft DCO [REP2-002].	The **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3) has been prepared having regard to the following made Orders as referenced in the Explanatory Memorandum: • Hornsea Three Offshore Wind Farm Order 2020/1656; • East Anglia One North Offshore Wind Farm Order 2022/432; • East Anglia Two Offshore Wind Farm Order 2022/433; • Hornsea Four Offshore Wind Farm Order 2023/800; • Awel y Môr Offshore Wind Farm Order 2023/1033; • Norfolk Vanguard Offshore Wind Farm Order 2022/138; • Norfolk Boreas Offshore Wind Farm Order 2021/1414; • Rampion Offshore Wind Farm Order 2014/1873; • Kentish Flats Extension Order 2013/343;

Ref	Question To:	Question	Applicant's Response
			• Walney Extension Offshore Wind Farm Order 2014/2950; • Portishead Branch Line (MetroWest Phase 1) Order 2022/1194; • A30 Chiverton to Carland Cross Development Consent Order 2020/121; • Thames Water Utilities Limited (Thames Tideway Tunnel) Order 2014/2384; • River Humber Gas Pipeline Replacement Order 2016/853; • Lake Lothing (Lowestoft) Third Crossing Order 2020/474; • London Underground (Northern Line Extension) Order 2014/3102 (made under the Transport and Works Act 1992); • Midland Metro (Wolverhampton City Centre Extension) Order 2016/684 (made under the Transport and Works Act 1992); • Northampton Gateway Rail Freight Interchange Order 2019/1358; • West Midlands Rail Freight Interchange Order 2020/511; and • The Sheringham Shoal and Dudgeon Extensions Offshore Wind Farm Order 2024.
DCO 1.2	The Applicant	*Part 1, Article 2* Definition of "Commence" Confirm which Schedule 1, Part 3 Requirements must be discharged before the development commences including the onshore site preparation works; i.e where onshore site preparation works must be approved as well.	Requirement 10 of Part 3 to Schedule 1 of the Order secures the approval for a programme of stages for onshore site preparation works as distinct from the stages for the remainder of the authorised project. Various of the requirements secure discharge in relation to a stage as identified in the approved programmes. Consequently, no works in a stage comprising onshore site preparation works may commence unless and until the following requirements have been discharged: • Requirement 12 – provision of landscaping; • Requirement 13 – implementation and maintenance of landscaping; • Requirements 15 and 16 – highway accesses; • Requirement 19 – onshore archaeology; • Requirement 20 – public rights of way; • Requirement 21 – open access land; • Requirement 22 – code of construction practice; • Requirement 23 – construction method statement; • Requirement 24 – construction traffic management plan; and • Requirement 26 – coastal erosion in respect of Work Nos. 6 and 7.
DCO 1.3	The Applicant MMO National Grid	*Part 2, Article 5* The MMO [REP1-056] has expressed concerns with this Article. It states that Articles 5(5), 5(8) and 5(12) conflict with provisions within the Marine and Coastal Areas Act 2009 in that the	The Marine Management Organisation's Written Representation **[REP1-056]** refers back to its concerns regarding Article 5 as set out in its Relevant Representation **[RR-219]**. As noted in **Deadline 1 Submission – 8.24 Applicant's Responses to Relevant Representations** **[REP1-017]**, the wording of Article 5 is well precedented to allow the transfer of the benefit of a marine licence.

Ref	Question To:	Question	Applicant's Response
		transfer of benefits to another undertaker, even as a temporary lease, cannot be undertaken without the MMO's consent, and that the three identified paragraphs should be removed. The Applicant's response [REP2-026] considers the provisions in the Article have been used in other made Orders. a) The ExA requires a further explanation from both the Applicant and the MMO as to why the Article as drafted is/is not appropriate, with specific and relevant Orders cited to demonstrate that the Secretary of State has/has not accepted similar wording regarding the transfer of benefits that did/did not require approval of the MMO.	The wording of this Article follows that adopted in the East Anglia ONE North Offshore Wind Farm Order 2022/432 and the East Anglia TWO Offshore Wind Farm Order 2022/433. It is closely aligned with the wording in the Sheringham Shoal and Dudgeon Extensions Offshore Wind Farm Order 2024, Hornsea Four Offshore Wind Farm Order 2023/800 the Norfolk Boreas Offshore Wind Farm Order 2021/1414 and the Norfolk Vanguard Offshore Wind Farm Order 2022/138. The ability to transfer the benefit of the deemed marine licence was not specifically considered in the Examining Authority's report to the Secretary of State in relation to the applications for the two East Anglia projects or Norfolk projects, but was considered in detail in relation to the application for the Hornsea Four project where the Marine Management Organisation (MMO) adopted a position similar to that set out in their relevant representation in respect of the Rampion 2 Application. The Examining Authority rejected the MMO's request for change to the equivalent article 5 (Benefit of the Order) of the Hornsea Four Offshore Wind Farm Order, noting that the provision had been included in recently made Orders for Norfolk Vanguard, Norfolk Boreas, East Anglia ONE North and East Anglia TWO. The Secretary of State's decision letter confirmed that it accepted the modifications to the draft Order proposed by the Examining Authority which it was considered would have permitted the transfer of part of the deemed marine licence. The wording permitting transfer in connection with a lease was retained. The wording of Article 5 has been updated in the version of the **Draft Development Consent Order** **[REP2-002]** submitted at Deadline 3 to reflect the approach adopted in the previous Orders to confirm that the deemed marine licences may not be transferred in part.
		b) The ExA requests National Grid to respond to the Applicant's Deadline 2 submission [REP2-028] on the wording of this Article that it does not need to expressly transfer benefits to National Grid.	
DCO 1.4	The Applicant	*Part 2, Article 6* In its LIR [REP1-049] the SDNPA considers the provisions of the National Parks and Access to the Countryside Act 1949 as updated by the Levelling Up and Regeneration Act 2023 to "seek to further" the purposes of the National Park should be conferred to the Applicant in this Article. The Applicant states [REP2-024] that it is	It is anticipated that this question is directed at South Downs National Park Authority (SDNPA), however the Applicant clarifies that s11A of the National Parks and Access to Countryside Act 1949 as amended by section 245 of the Levelling up and Regeneration Act 2024 imposes a duty on relevant authorities to have regard to the purposes in section 5(1) of the 1949 Act in exercising or performing functions in relation to or so as to affect land in a National Park. The Secretary of State must therefore seek to further the purposes in section 5(1), at the same time as determining the application for the Rampion 2 Offshore Wind Farm Order in accordance with the National Policy Statements EN1, EN3 and EN5 as required by section 104 of the Planning Act 2008. The Applicant notes that the Secretary of State's decision in relation to the Sheringham Shoal and Dudgeon Extension Wind Farm Order 2024 confirms the duty under s245 of the Levelling-up and Regeneration Act 2023 for public bodies to further the purposes of AoNBs (emphasis added, see paragraph 4.55 of the decision letter).

Ref	Question To:	Question	Applicant's Response
		already bound by s11A of the National Parks and Access to the Countryside Act 1949 and the NPS. Explain whether this response satisfies the initial concern and if not, justify further the need to amend Article 6 with suggested wording.	The Applicant, as undertaker, must then comply with the Order as made by the Secretary of State having exercised these functions.
DCO 1.5	Relevant Planning and Highway Authorities	*Parts 3 and 4, Articles 11(7), 12(3), 13(2), 15(5), 16(9) and 18(7)* West Sussex CC in its LIR [REP1-054] state that the 28-day time-period set out in Article 13(2) is insufficient. a) Confirm that the same time-period set out in the said Articles are adequate. b) Comment on the appropriateness of the deemed consent provisions in these (and possibly other) Articles and the Applicant's justification for such provisions as set out in response at Deadline 2 [REP22-022].	
DCO 1.6	The Applicant	*Part 3, Article 15* The ExA is concerned that the power in this Article, in which the Undertaker may "*alter the layout of any street*" to be too wide and onerous. The ExA considers that at the very least, it should be restricted to those streets within the Order limits. Respond and amend the draft DCO [REP2-002] if necessary.	The Applicant notes that the wording of this Article follows the equivalent provisions in the Hornsea Three Offshore Wind Farm Order 2020 and the Hornsea Four Offshore Wind Farm Order 2023. The Article has further precedent in the Drax Power (Generating Stations) Order 2019, the Great Yarmouth Third River Crossing Development Consent Order 2020 and the Longfield Solar Farm Order 2023; in each of these three Orders the equivalent Article (Power to alter layout, etc., of streets) provides for express authority for alteration to specific streets as set out in a Schedule to the Order before providing a general power of alteration; the wording of the provision in the Rampion 2 **Draft Development Consent Order [REP2-002]** (updated at Deadline 3) replicates the second limb of the equivalent article in each of these Order. It does not therefore provide any wider powers than already secured in precedent Orders. In each instance any temporary alteration to a street is to be restored to the reasonable satisfaction of the street authority, and the consent of the street authority must be sought in advance. Provision for deemed consent has been included in the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3) for Rampion 2.
DCO 1.7	The Applicant	*Part 5, Articles 23(2), 24 and 32* At Issue Specific Hearing 1 held on Wednesday 7 February 20021 and Thursday 8 February 2024 (ISH1) [EV3-001], the ExA questioned the Applicant about the general use of restrictive covenants and their apparent wide-ranging power and lack of definition. In its response at D1	The wording of the **Draft Development Consent Order [REP2-002]** submitted at Deadline 3 has now been amended so that it clearly refers to the imposition of restrictive covenants.

Ref	Question To:	Question	Applicant's Response
		[REP1-033] the Applicant stated they were all intended to be referring to a restrictive covenant (as opposed to "covenants" and "other restrictive covenants" and that the purposes for which restrictive covenants are sought in relation to land shaded blue on the Land Plans are prescribed by Schedule 7 to the Order.	
		The ExA notes the Secretary of State's decision of the M4 Motorway (Junctions 3 to 12) (Smart Motorway) DCO) (paragraph 62) which, in respect to restrictive covenants, the Secretary of State decided "*to remove the power to impose restrictive covenants and related provisions as [the Secretary of State] does not consider that it is appropriate to give such a general power over any of the Order land […] in the absence of a specific and clear justification for conferring such a wide-ranging power in the circumstances of the proposed development and without an indication of how the power would be used*."	The Applicant notes that it appears from the decision letter that Highways England, the promoter of that Order, was seeking a power to impose restrictive covenants over "any of the Order land" as a general power and that the wide-ranging and imprecise nature of this power was the issue which the Secretary of State was seeking to resolve by removing the relevant power. The Applicant is seeking the power in Article 24(1) (which in the Deadline 3 version of the Order has been newly re-numbered as Article 25) of the Order to impose restrictive covenants over the Order Land insofar as Article 22(1) (which in the Deadline 3 version of the Order has been newly re-numbered as Article 23) (compulsory acquisition of land) permits, namely it must be required for the authorised project, or to facilitate it, or is incidental to it. Whilst Article 24(1) may appear to be a general power over the entirety of the Order Land, the scope of this power must be considered in the context of this particular Order, having regard to Article 24(2) and Schedule 7 to the draft Order. As a result of the provisions in Article 24(2), the power to impose restrictive covenants over land which is contained in column (1) of Schedule 7 (being land over which the Applicant may only acquire new rights and impose restrictive covenants), is an expressly limited one, because the restrictive covenants may only be imposed for the purposes specified in Schedule 7 against the relevant land parcel. There are 3 packages of restrictive covenant in Schedule 7, namely 'Underground Cable Connection Restrictive Covenants', 'Cable Restrictive Covenants', and 'Landscaping and Environmental Mitigation Restrictive Covenants' which are explained further below. It would not be lawful pursuant to Article 24(2) for the Applicant to impose a restrictive covenant for a different purpose which is not listed in the package of restrictive covenants against the relevant land parcel. Nor would it be lawful for the Applicant to impose a restrictive covenant over a land parcel listed in column (1) of Schedule 7 but which does not specify a restrictive covenant package in column (2). For example, the Applicant may impose an 'Underground Cable Connection Restrictive Covenant', but not a 'Cable Restrictive Covenant', or a 'Landscaping and Environmental Mitigation Restrictive Covenant' over land parcel 1a/1 because it is not specified in Schedule 7 as being capable of having the latter purposes of restrictive covenant imposed upon it. The specific land parcels listed in column (1) of Schedule 7 correspond with land which is shown shaded blue on the **Pre-Exam Procedural Deadline Submission – 2.1.2 Land Plans Onshore – Revision B [PEPD-004**]. The power to impose restrictive covenants does not apply to the land shown shaded green on the Land Plans Onshore, which as explained in response to the Examining Authority's Written Question **DCO1.8** below is expressly excluded by Article 32(11) (now Article 33(11)). Furthermore, the power does not apply to the land shown shaded grey on the Onshore Land Plans which is expressly excluded by Article 22(3). The Applicant acknowledges that the general Article 24(1) power to impose restrictive covenants would however apply to the very limited areas of land shown shaded pink on the Land Plans Onshore for freehold acquisition. These comprise: plot 33/9 required for the onshore substation at Oakendene and plot 34/28 which is required for the extension to the existing National Grid substation at Bolney.

Ref	Question To:	Question	Applicant's Response
			The Applicant notes that the Secretary of State declined to include a general power to impose restrictive covenants in the recently made Sheringham Shoal and Dudgeon Extensions Offshore Wind Farm Order 2024. However, in the context of the Order, the removal of the power set out in Article 24 (which in the Deadline 3 version of the Order has been newly re-numbered as Article 25) of the draft Order could result in the Applicant having to acquire a greater area of freehold land than would otherwise be required and therefore the Applicant considers it is necessary to retain this power in the Order to ensure that the impact on landowners is minimised. With regards Plot 33/9, which can be seen on Onshore Works Plans Sheet 33 [PEPD-005], this land is required for Work No 16 (onshore substation and associated connection works) and Work No 17 (Environmental mitigation). The proposed freehold acquisition reflects the area within which the substation could be constructed to ensure that there are no impediments to its delivery. There is flexibility over the final location and footprint of the onshore substation, therefore the entire Plot 33/9 will not be subject to its physical footprint, but surrounding land may instead form part of the substation access road, landscaping or cable connections into the substation from the south and east. The Applicant would seek to exercise the Order powers in a proportionate manner, so as to acquire new rights and a restrictive covenant over the land surrounding the substation within Plot 33/9 that is required for the cable connections, access road and landscaping as appropriate. If the power to impose the Cable Restrictive Covenants and/or Landscaping and Ecological Mitigation Restrictive Covenants is not available to protect the infrastructure and mitigation works, the Applicant may have little option but to exercise freehold acquisition powers over a wider area within Plot 33/9 to ensure that the relevant works are protected. This same issue could apply to the pink land required for the Bolney substation comprising Work No. 20 (plot 34/28) through which there will also be a cable connection to the substation (see Onshore Works Plans Sheet 34). Whilst the Applicant has an agreement in place for the land required for the onshore substation at Oakendene, as identified in the **Land Rights Tracker [REP2-007]**, (further updated and submitted at Deadline 3) compulsory acquisition powers are still sought and remain necessary over this land in the event of a default and to address any third party interests. If compulsory acquisition powers need to be exercised, the removal of the power to impose restrictive covenants over the two pink freehold land areas in the Order could otherwise force the Applicant to acquire a greater area of land than would be required if it were able to instead acquire rights and impose restrictive covenants over such part(s) of these affected plots. The Applicant cannot risk there being a 'gap' in its land rights between the substations and the connecting works (such as the access road and cable connections) and the retention of the power at Article 24 would enable the Applicant to take a proportionate approach to acquisition. The Applicant therefore submits that the power in Article 24(1) to impose restrictive covenants over the pink land is necessary. The scope of the power in Article 24(1) to impose restrictive covenants over blue, green or grey land on the Land Plans Onshore is already expressly constrained by the Order. In this way the Applicant submits that the position is significantly different from that which was proposed and refused in the M4 Motorway (Junctions 3 to 12) (Smart Motorway) DCO and other orders
		The ExA notes that the Secretary of State has taken a very similar position in the A556 (Knutsford to Bowdon Improvement) Order and the Lancashire County Council (Torrisholme to the M6 Link (A683 Completion of Heysham to M6 Link Road)) Order.	As set out above, it should be noted that in those orders a general power to impose restrictive covenants was being sought over all order land, most of which was the subject of full freehold acquisition powers and therefore the restrictive covenants would not have been identified or confined to prescribed purposes as in the case of the draft Order. This is not comparable with the power being sought by the Applicant in the Order as the power is limited to specific purposes save in respect of two very limited areas of land.
		Provide additional justification for the need and use restrictive covenants on the plots as set out in Schedule 7, and	The use of restrictive covenants enables the Applicant to minimise the impact of acquisitions where appropriate by imposing a restrictive covenant rather than acquiring the land. It also restricts the purposes for which restrictive covenants can be imposed.

Ref	Question To:	Question	Applicant's Response
		in particular the powers the restrictive covenants will contain.	There are 3 packages of restrictive covenant in Schedule 7, namely 'Underground Cable Connection Restrictive Covenants', 'Cable Restrictive Covenants', and 'Landscaping and Environmental Mitigation Restrictive Covenants'. Restrictive covenants are imposed within the final cable corridor in order to: • safeguard what will be a nationally significant asset, that will be part of the national electricity transmission network, meeting a renewable energy need that is firmly enshrined in government policy via the National Policy Statements; • protect the physical integrity of the Rampion 2 cable infrastructure, by preventing interference with/damage to it, and by ensuring that it can be easily accessed for maintenance; • ensure the continued transmission of electricity so as not to compromise the national yield; and • prevent injury to members of the public which may result from damage to or interference with the installed infrastructure. The 'Cable Restrictive Covenants' and 'Underground Cable Connection Restrictive Covenants' are sought to protect the cables and associated infrastructure from interference and damage, and to protect the public from injury that may result from such interference. Any development or ground level alteration in the immediate vicinity of buried cables may compromise the reliability, efficiency and safety of the installed assets and thereby putting the overall operation of the Scheme at risk. Any excavation (deeper than those defined in the covenants), development or construction works near buried high-voltage power cables could result in fatal electric shock to involved personnel. The 'Underground Cable Connection Restrictive Covenants' includes a restriction on excavations exceeding 0.3m and other works which affect the land/sea-bed levels and land cover, however, this is subject to a caveat that the Applicant may give consent to such works and must act reasonably and not withhold such consent unless the works would cause damage or make it materially more difficult to access or maintain the authorised development. In this way, the Applicant has sought to ensure that this restrictive covenant is no more than reasonably required to protect the apparatus, nor an absolute bar on such activities. 'Cable Restrictive Covenants' are sought in respect of the land required for the onshore connection Works 7, 8, 9 and 19 and to protect the cables and infrastructure. Such covenants restrict excavations beyond a depth of 0.9m but subject to specific express carve-outs for certain activities such as laying hard core access tracks and maintaining hard surfacing without manholes which are designed to enable existing uses to continue without unnecessary interruption. These restrictive covenants restrict planting of trees and shrubs over the relevant land, any actions which would interfere with the cables or support for the authorised development, any activity which would disturb ecological mitigation areas or areas of habitat creation while the Applicant is bound by any consent to maintain that ecological mitigation areas or areas of habitat creation, and otherwise interfering with the exercise of other rights. This restrictive covenant also includes consent mechanisms which require the Applicant to act reasonably in granting consent for most of the restricted activities. 'Landscaping and Environmental Mitigation Restrictive Covenants' are sought to protect the landscaping and environmental mitigation works comprising Work Number 17 from subsequent damage or interference for such period as these works may be required to be maintained in accordance with any consent. These restrictive covenants prevent activities which result in disturbance to any landscaping, environmental or ecological mitigation or enhancement areas or areas of habitat creation during the period within which the Applicant is bound by any consent to maintain the same. This restrictive covenant also includes consent mechanisms to avoid resulting in an absolute bar.

Ref	Question To:	Question	Applicant's Response
			For the reasons set out above, the restrictive covenants are necessary and proportionate to the protection of the infrastructure and their imposition is less impactful than simply acquiring the land.
DCO 1.8	The Applicant	*Article 32 (10)* The ExA notes the oral response given by the Applicant at the ISH1 [EV3-001] and in writing at Deadline 1 [REP1-033]. Notwithstanding, the ExA remain concerned by the broad power contained within this Article. The Applicant states that Article 32 (10) *"is only intended to apply in relation to a number of very limited and specified circumstances, namely the parcels of land that are both listed in the temporary possession schedule (Schedule 9) and are also identified in Schedule 7 (new rights)*". a) The ExA would like clarification on which plots appear in both Schedules 9 and 7 of the draft DCO [REP2-002] and thus referred to by the Applicant. The Applicant further explains that: "*for example, plot 228 [identified as 2/28 on the Land plan [PEPD-003]] is required first for Work No. 12 (temporary ducting) and identified for that purpose in Schedule 9 to the Order but thereafter, would form part of an operational access for which a permanent right would be needed as identified in Schedule 7 to the Order and so it has been put into both schedules*." The ExA notes the Land plan indicates Plot 2/28 is show as "blue land", and thus where CA for new rights is sought. The ExA questions why the Applicant has approached TP in this way. The ExA questions why land sought for CA for new rights isn't simply listed in Schedule 7 (to include Plot 2/28 for example) and land only for TP should be included in Schedule 9. The ExA considers the Applicant's approach is	The only plots which appear in both Schedules 7 and 9 are plots 2/28, 33/14 and 33/16. These parcels are shown coloured blue on the **Pre-Exam Procedural Deadline Submission – 2.1.2 – Land Plans Onshore** [**PEPD-003]** because the power to compulsorily acquire new rights and impose restrictive covenants applies to those parcels. A package of Operational Access Rights is sought over Plot 2/28, whereas the Applicant seeks Landscape and Environmental Mitigation Rights and Restrictive Covenants over Plots 33/14 and 33/16. All of the other land listed in Schedule 9 to the draft DCO is land which is shown shaded green on the Land Plans Onshore. The Applicant acknowledges that an alternative approach could have been to include the parcels in Schedule 7 only. That would have necessitated the inclusion of compulsory acquisition powers to acquire permanent new rights over Plot 2/28 for duct stringing (Work 12) and new rights to use the land as a temporary compound (Work 10) over Plots 33/14 and 33/16. Those works are solely temporary works packages and the Applicant did not consider it would be proportionate to include packages of new permanent rights for those purposes. It would also be open to the Applicant to just seek to rely on the power to take temporary possession of 'any other Order' land in Article 32(1)(a)(ii) (which in the Deadline 3 version of the Order has been newly re-numbered as Article 33) of the Order rather than expressly list Plots 2/28, 33/14 and 33/16. Given the rather different nature of the works proposed to be undertaken on these land parcels during temporary possession and the proposed permanent rights packages (for example a construction compound versus rights for landscape planting and retention), the Applicant considered that it should expressly draw to the attention of affected persons what it intends to do whilst in temporary possession of the relevant land parcels and afford those persons a clear opportunity to make representations should they wish to do so. The Applicant's approach is therefore a precise one, aimed at providing affected parties with clarity and certainty as to the differences between the proposed uses of those three land parcels of land during temporary possession and permanently. It is not possible for the Applicant to change any of the remainder of the land identified in Schedule 9 to permanent new rights without the Applicant making a request to modify the Order and include additional land for the purposes of the Infrastructure Planning (Compulsory Acquisition) Regulations 2010. Article 33(11) expressly prevents the undertaker from doing so: '*The undertaker may not compulsorily acquire under this Order the land referred to in sub-paragraph (1)(a)(i)*'. It is only by exception that the Applicant may acquire new rights or impose restrictive covenants over that land, namely: '*to the extent that such land is listed in column (1) of Schedule 7*'. The Applicant has proposed a drafting change to the wording of Article 33(11) (formerly Article 32(10)) to reinforce that this exception applies only to the 3 specified parcels. If, contrary to the Applicant's position, the Examining Authority wishes to delete the exception wording from Article 33(11) (former Article 32(10)) and remove the 3 parcels from Schedule 9, the Applicant considers that it would be necessary to add 'duct stringing' and 'use as a construction compound' to the list of activities in Article 33(d) which may be carried out on the land during temporary possession taken pursuant to Article 33(1)(a)(ii) so that it is clear to the landowners/occupiers that these are authorised.

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		imprecise, and moreover allows for a wide and unjustified power in which any Order land identified for TP could be changed to new rights, regardless of the Applicant's intentions. b) Consider revising Schedules 7 and 9 and remove and redraft Article 32 (10) so that the Undertaker may not compulsorily acquire under this Order (Article) the land conferred to in the appropriate paragraph and in Schedule 9 of the Order.	
DCO 1.9	SDNPA	*Articles 32, 33, 43 and 44* The LIR [REP1-049] considers the powers in these Articles to be imprecise and arbitrary. Justify further and set out wording for each article which would overcome the concern. Alternatively, confirm whether the Applicant's response at Deadline 2 [REP2-024] has satisfactorily answered the concern.	Whilst the Applicant notes that this is directed at South Downs National Park Authority (SDNPA), Articles 32 and 33 (which in the Deadline 3 version of the Order has been newly re-numbered as Article 33 and 34) relate to the proposed powers for the temporary use of land for construction and maintenance purposes. The Applicant is not aware that SDNPA has any interest in land and therefore would question SDNPA's standing to comment on the temporary possession and/or compulsory acquisition powers.
DCO 1.10	The Applicant	*Article 43* The ExA notes the Applicant's response to the term "*or near any part of the authorised project*" [REP1-033] when discussed at ISH1 [EV3-001]. The ExA considers the term could be replaced with "*or adjacent to any part of the authorised development*" to ensure this power extends only to adjacent land. Consider and, if necessary, amend the draft DCO [REP2-002] accordingly.	The Applicant notes that the term 'near' is used in numerous previously granted Orders in the equivalent of this article, and this term is used in the Model Provision for Transport and Works Act Orders (see article 32 of The Transport and Works (Model Clauses for Railways and Tramways) Order 2006/1954. It was also used in the former model provisions for DCOs. It is noted that the term 'near' was also included in the equivalent article in the recently made National Grid (Yorkshire Green Energy Enablement Project) Development Consent Order 2024 and the Sheringham Shoal and Dudgeon Extensions Offshore Wind Farm Order 2024 As such the Applicant considers the current wording of the formerly numbered Article 43 to be appropriate.
DCO 1.11	The Applicant	*Articles 53, 54 and 55* Explain the origin of these Articles, justification for their need and whether they have been used on other made Orders.	**Article 53 No double recovery.** ***Origin*** Model provision 44 (No double recovery) of the Transport and Works (Model Clauses for Railways and Tramways) Order 2006 ***Justification*** This article ensures that compensation is not payable both under the Order and other compensation regimes for the same loss or damage. In addition, the article provides that there is not to be double recovery under two or more different provisions of the Order. This

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article provides clarity and reflects the established position that a claimant shall be compensated for no more than and no less than their loss.

Inclusion of article in other recently made Orders (not exhaustive)
The HyNet Carbon Dioxide Pipeline Order 2024 (article 46)
The National Grid (Yorkshire Green Energy Enablement Project) Development Consent Order 2024 (article 31)
The A66 Northern Trans-Pennine Development Consent Order 2024 (article 39)
The A303 (Amesbury to Berwick Down) Development Consent Order 2023 (article 37)

The Southampton to London Pipeline Development Consent Order 2020 (article 47)
The Port of Tilbury (Expansion) Order 2019 (article 40).

Article 54 Disregard of certain improvements, etc.

Origin
Model provision 26 (Disregard of certain interests and improvements, etc) of the Transport and Works (Model Clauses for Railways and Tramways) Order 2006 and also section 4 of the Acquisition of Land Act 1981 (see below).

Justification
The wording of this article mirrors section 4 (*assessment of compensation*) of the Acquisition of Land Act 1981 ("the 1981 Act") and is necessary to specifically apply the effect of section 4 of the 1981 Act in the Order because the 1981 Act only applies to a compulsory purchase order, or to compulsory purchase in another enactment which has applied its provisions. Neither the 2008 Act, nor standard Order provisions, apply the 1981 Act. Sections 120(3) and 120(5)(a) and Schedule 5 (by virtue of section 120(3)) of the 2008 Act allow the application in a DCO of statutory provisions which relate to the payment of compensation.

Inclusion of article in other recently made Orders (not exhaustive)
The National Grid (Yorkshire Green Energy Enablement Project) Development Consent Order 2024 (article 29)
The A66 Northern Trans-Pennine Development Consent Order 2024 (article 37)
The A12 Chelmsford to A120 Widening Development Consent Order 2024 (article 33)
The A303 (Amesbury to Berwick Down) Development Consent Order 2023 (article 35)
The Great Yarmouth Third River Crossing Development Consent Order 2020 (article 40)

The Port of Tilbury (Expansion) Order 2019 (article 38).

Article 55 Set-off for enhancement in value of retained land

Origin
Model provision 27 (set-off for enhancement in value of retained land) of the Transport and Works (Model Clauses for Railways and Tramways) Order 2006 and also section 7 of the Land Compensation Act 1961 (see below).

Justification
The principle of this article was established by section 7 of the Land Compensation Act 1961 (e*ffect of certain actual or prospective development of adjacent land in same ownership*) which has been repealed but is now reflected in section 6B of that Act (*lower compensation if other land gains value*) following amendments made by the Neighbourhood Planning Act 2017. This compensation principle needs to be set out in the Order in respect of the authorised development, and sections 120(3) and 120(5)(a) of and Schedule 5

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			(by virtue of section 120(3)) to the 2008 Act allow the application in a DCO of statutory provisions which relate to the payment of compensation. ***Inclusion of article in other recently made Orders (not exhaustive)*** The National Grid (Yorkshire Green Energy Enablement Project) Development Consent Order 2024 (article 30) The A66 Northern Trans-Pennine Development Consent Order 2024 (article 38) The A12 Chelmsford to A120 Widening Development Consent Order 2024 (article 34) The A303 (Amesbury to Berwick Down) Development Consent Order 2023 (article 36) The Great Yarmouth Third River Crossing Development Consent Order 2020 (article 41) The Port of Tilbury (Expansion) Order 2019 (article 39).
DCO Schedules			
DCO 1.12	The Applicant	*Schedule 1, Part 1 Work Nos 10, 11, 12, 13, 14 and 15* Work Nos 10 to 15 contain no description of what these works entail. In its response at Deadline 2 e.g [REP2-021] the Applicant considers it is not appropriate to define these works as "*it is not possible to predict at this stage exactly what [they] would be used for*." The Applicant cites this as the adopted approach. For the Southampton London Pipeline Order [2020 No.1099], an example Work No is described as "*works to construct a temporary compound for use during the construction of the authorised development, comprising…[x]… to include [as an example]: office, welfare and security facilities; a parking area for staff; power supplies and temporary lighting; pipe equipment and fitting storage; plant storage…*" and others. Consider whether, on reflection and given the concerns raised, a fuller explanation of these works might assist the ExA and the Secretary of State.	It is the Applicant's position that it is not appropriate to include further specification in respect of Work Nos. 10 to 15. The approach adopted is consistent with other recently made Orders. The Applicant notes that in the Hornsea Four Offshore Wind Farm 2023/800 Work No. 9 comprises '*temporary works'* comprising *"(a) temporary vehicle access tracks;* *(b) temporary works area to support the construction activities in Work No. 7;* *(c) temporary logistics compounds to support the construction of Work Nos. 5, 6, 7 and 8; and* *(d) temporary construction ramp"* Whilst '*logistics compounds'* are defined this is limited to "*a construction site associated with the connection works including portable offices, welfare facilities, parking and storage for construction of the authorised project"*. No definition or further clarification is given in respect of temporary works areas or vehicle access tracks. The Awel y Mor Offshore Wind Farm Order 2023/1033 includes numerous works forming part 'A' of a wider work referring to creation of a temporary construction compound, for example "*Work No. 10A— Within Work No. 10, the creation of a temporary construction compound of no more than 10,000 m2*". The term '*temporary construction compound'* is not defined. Further, Work No. 13 is described as "*creation of construction access, construction of a haul road, temporary construction working areas and laydown area";* subsequent works use this same terminology and add reference to works to junctions and visibility splays either generally or by reference to specific highways, and the terms '*construction access'* and '*temporary construction working areas'* are not further defined. It is not considered appropriate to include further specification in the Rampion 2 Order, following the approach adopted in these made Orders, and because should any further description be given it must be on an inclusive basis as is the case with the Southampton London Pipeline Order 2020 and would not limit the activities that could be carried out at a compound. The scope of activities which could be carried out at a compound site, have been assessed in the Environmental Statement which is to be a certified document (pursuant to schedule 16, which will be updated during the course of the Examination) and the works authorised under the terms of the Order are limited to those assessed in the Environmental Statement. Further clarification as to the scope of the assessment of activities at the construction compounds will be included in an updated version of Chapter 4 of the Environmental Statement – Project Description prior to the close of the Examination, and the activities at the compounds will be controlled by the submission and approval of a stage specific Code of Construction Practice for the stage comprising the relevant compound which has been updated at Deadline 3 to include these details.

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			In relation to Work Nos. 11 and 12 there is little additional information that can be provided in their description for a temporary soil storage area and non-intrusive works for duct and cable installation preparation and stringing out; these works have been described separately to confirm that they will not comprise intrusive works. Similarly, there is little more additional information that can be provided in respect of the accesses which are currently defined as temporary construction accesses, operational accesses and construction and operational accesses, in each case including creation of visibility displays and vegetation clearance. The approach adopted is consistent with previously made Orders as set out above.
DCO 1.13	Horsham DC	*Schedule 1, Part 1 Work No 17* Respond to the Applicant's response at Deadline 2 [REP2-022] that Work No 17 should not be defined so as not to limit the scope of the environmental works to be undertaken. Set out how the Council would expect Work No 17 should be defined and cite, if possible, other Orders where this has been done.	
DCO 1.14	The Applicant	*Schedule 1, Part 2 Requirement 1* The standard time-period for commencement of a nationally significant infrastructure project is normally five years. The Secretary of State for the Drax Carbon Capture Order 2024 recently struck out a request for a seven-year commencement period. Justify the reason for commencement to be no later than seven years, or alternatively amend the draft DCO accordingly here and for Article 23(1).	The Applicant acknowledges that this was recently struck out in that order, however, every application for an extension of the 'standard' 5-year time limit should be taken on its own merits and therefore the decision in the Drax Carbon Capture Order 2024 should not be taken as a reason to refuse the Applicant's request in relation to the Order. The Applicant has set out its justification previously within the **Explanatory Memorandum** to the DCO **[REP2-004]** and further notes that a 7-year commencement period is not unprecedented. Other DCOs, including DCOs for offshore wind farms, have been made with 7-year commencement terms, such as The Hornsea Three Offshore Wind Farm Order 2020, The Hornsea Four Offshore Wind Farm Order 2023 and The Sheringham Shoal and Dudgeon Extensions Offshore Wind Farm Order 2024. The latter Order was made very recently on 17 April 2024 and is highly comparable to the Rampion 2 Project. The Secretary of State was satisfied in making that Order that factors such as the scale of that project justified a 7-year period for the implementation of the project. National Grid's The National Grid (Hinkley Point C Connection Project) Order 2016, has an 8-year commencement period. A 7-year period for commencement of the Proposed Development is required by the Applicant due to: • the requirement to win a Contract for Difference (CfD) round to secure a route to market (the timing and outcomes of which are outside of the Applicant's control) (The Applicant cannot bid into CfD rounds until consent for the Project has been obtained and it is commercially compliant with the rules of that round. There is a chance that a CfD might not be won in the first round entered and given the need to procure the relevant construction plant pursuant to a CfD (which could take two or three attempts) a commencement of 7 years is required); • supply chain challenges (limited numbers of suppliers and increasing demand for offshore wind) (Challenging supply chain conditions further exacerbate the time restriction risk of a consent under 7 years. There are a small number of OEMs (Original Equipment

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			Manufacturers, known as 'Tier 1s') and importantly for the Applicant there are also a very low number of WTG and substation plant suppliers. There is expected to be even further increasing demand for offshore wind in the next few years. The Applicant expects to utilise framework agreements and measures such as blocking out manufacturing 'slots' several years in advance, however the number of other projects also requiring supply contracts impacts the 'Tier 1' timescales for delivery); and • the scale of the Proposed Development.
DCO 1.15	West Sussex CC	*Schedule 1, Part 3 Requirements 6 and 7* Respond to the amendments made to the draft DCO submitted at Deadline 2 [REP2-002] regarding changes to Requirements 6 and 7, which now separate Works Nos 6 and 7 from Works Nos 16 and 20, and whether this overcomes the concerns identified in the LIR [REP1-054].	
DCO 1.16	West Sussex CC	*Schedule 1, Part 3 Requirement 7* Provide a response to the Applicant's assertion at Deadline 2 [REP2-020] that details of working width and haul roads, which was requested within the LIR [REP1-054] to be included within Requirement 7, will form part of the outline CoCP which is secured by Requirement 22 of the DCO [REP2-002].	Whilst this question is directed towards West Sussex County Council, the Applicant notes that requirement 23 which secures the stage specific Construction Method Statement, which forms part of the Code of Construction Practice, specifically requires confirmation of the cable corridor location and its width through the relevant stage (see requirement 23(2)(f) of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3)).
DCO 1.17	The Applicant	*Schedule 1, Part 3 Requirement 8* In its WR [REP1-089], Cowfold v Rampion state that the 12.5m height above finished ground level in Requirement 8 (3)(b) is imprecise. The ExA has some sympathies with this concern. Consider and amend this Requirement and provide the height above ordnance datum.	The Applicant has amended the parameters in requirement 8 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3) to provide a maximum height above ordnance datum, and the **Design and Access Statement [AS-003]** (updated at Deadline 3) have been amended accordingly
DCO 1.18	Horsham DC Arun DC West Sussex CC SDNPA	*Schedule 1, Part 3 Requirements 10, 12 and 16* Provide a response on the Applicant's amendments to the draft DCO submitted at Deadline 2 [REP2-002] in which the definition of "Commence" in Article 2 and a number of Requirements have been amended in	Whilst this question is directed to the local authorities, the Applicant notes that requirement 10 secures the submission of a programme of works for the authorised project, with scope for a separate programme to be submitted and approved for onshore site preparation works. Once stages are identified through discharge of this requirement, requirements 12 and 16 much each be discharged in respect of each stage including each stage of onshore site preparation works identified.

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	Mid Sussex DC	respect to "carving-out" onshore site preparation works for the onshore Works.	
DCO 1.19	The Applicant Horsham DC Arun DC West Sussex CC SDNPA Mid Sussex DC	*Schedule 1, Part 3 Requirement 14* There are concerns from relevant planning authorities over the provisions of this Requirement and the reliance on the provisions contained within the Biodiversity Net Gain (BNG) Strategy Information document, Appendix 22.15 to Chapter 4 of the ES [APP-193]. The ExA notes the Applicant's responses to West Sussex CC [REP2-020] and SDNPA [REP2-024] in respect to the wording within the Requirement and the BNG Strategy Information document. However, the ExA is concerned that the BNG Strategy Information document may not contain the required evidence or clarity that BNG can be achieved, and accordingly Requirement 14 is not adequate in its current guise. Interested Parties are asked to review the questions contained in BD (below) and consider whether Requirement 14 needs amending and suggest appropriate wording.	Requirement 14 provides for a biodiversity net gain strategy to be submitted and approved by the relevant planning authority prior to the commencement of the authorised project in any stage (excluding any onshore site preparation works). The content of the strategy submitted for approval must accord with the outline biodiversity net gain information **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the Environmental Statement **[APP-193]**. This confirms that the project will deliver biodiversity net gain (BNG) of at least 10% to be measured using the Natural England Biodiversity Metric, and section 5.4 sets out how the requisite BNG will be secured and provides that options for delivery of BNG will be determined at detailed design stage in discussion with the relevant authorities.
DCO 1.20	Historic England	*Schedule 1, Part 3, Requirement 19* Explain, as set out in RR [RR-146] why the Requirement is "*not sufficient for appropriate safeguards*."	
DCO 1.21	West Sussex CC	*Schedule 1, Part 3, Requirement 19* Respond to the Applicant's comments to the additional wording to this Requirement, suggested by West Sussex CC in its LIR [REP1-054], are unnecessary as such matters are contained within the outline Onshore Written Scheme of Investigation [APP-231].	

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DCO 1.22	West Sussex CC	*Schedule 1, Part 3 Requirement 20* Comment, if required, on the revisions made by the Applicant to Requirement 20 of the draft DCO submitted at Deadline 2[REP2-002]. List any further amendments, if required, to this Requirement with justification.	
DCO 1.23	The Applicant	*Schedule 1, Part 3 Requirement 22* Horsham DC [REP1-044], Mid Sussex DC [REP1-046] and West Sussex CC [REP1-054] have expressed views that the hours of construction, as set out in the outline CoCP [PEPD-033] should be set out in Requirement 22 so that they are firmly fixed and easier to control. West Sussex CC also states that the list of plans to be included within the submitted CoCP, as set out in paragraph (5), should also include an engagement plan as per commitment C-19 of the Commitments Register [REP1-015], and a phasing plan (see WQ CM 1.4). The ExA considers that the provision of clarity in the draft DCO [REP2-002] would be of benefit to the Interested Parties and may provide greater comfort to the Secretary of State when determining the Proposed Development.	The Applicant is aware of a number of made Development Consent Orders (DCOs) do not have fixed construction hours set out on the face of the Order including The Hornsea Four Offshore Wind Farm Order 2023/800, The A47 Wansford to Sutton Development Consent Order 2023/218, The Lake Lothing (Lowestoft) Third Crossing Order 2020/474 and The Great Yarmouth Third River Crossing Development Consent Order 2020/1075.
		a) Given that construction hours are to be controlled in any event, re-consider the position set out at Deadline 2 e.g [REP2-023] and amend the draft DCO and the Commitments Register [REP1-015] if required.	The Applicant considers that the control of construction hours is appropriately secured through the Code of Construction Practice so as to provide a single source for confirmation of permitted working hours in any local authority area and allow a degree of flexibility where this is required. This approach allows control to be exercised by the relevant local planning authority but also ensures that should there be any need for a change this can be secured through amending the terms of the Code of Construction Practice, with the agreement of the local planning authority, without either requiring amendment to the Order or the Applicant breaching its terms.
		b) In pursuance of written question DCO 1.16 above, explain whether a Working Widths and Haul Route plan and a Site Restoration Plan should be added to the list set out in paragraph (4).	As noted above in relation to the Examining Authority's Written Question **DCO 1.16**, the Construction Method Statement secured by requirement 23 requires confirmation of the cable corridor location and its width through the relevant stage. This requirement also secures inclusion of a protocol for restoration and reinstatement of land used temporarily for construction (Requirement 23(2)(h)).

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DCO 1.24	Mid Sussex DC	*Schedule 1, Part 3 Requirement 29* In the LIR [REP1-046], it is stated that Requirement 29 should also include Work No 20. In response, the Applicant states [REP2-023] that the ES [PEPD-018] has already assessed noise levels at the existing National Grid substation at Bolney and, because noise generated by the Proposed Development at this location is expected to be minimal, no additional mitigation is necessary. Provide a response, explaining whether Mid Sussex are content with the response or justify further why Work No 20 should be included within Requirement 29.	
DCO 1.25	Horsham DC	*Schedule 1, Part 3 Requirement 33* Explain the need for the skills and employment strategy to be implemented during the lifetime of the development as opposed to being throughout the construction stage.	
DCO 1.26	The Applicant	*Schedule 1, Part 3 Various Requirements* West Sussex CC [REP1-054] have at various points pointed to areas where there is inconsistency in the approach to approval of the Requirements. It is the ExA's understanding that, for consistency, the discharge of all necessary requirements should be the responsibility of the relevant planning authority, with appropriate consultations undertaken accordingly (as set out in each Requirement) which should or should not involve the County Council. Review and amend, or provide specific examples where, as in the case of Requirements 17 and 18 of the draft DCO [REP2-002], it has not been used in other Orders and the	In the majority of the Requirements the Applicant has identified that the discharging authority is the relevant planning authority. However, where the statutory responsibility for matters secured by a Requirement sits with a specific statutory body, the Applicant considers that it is appropriate for those Requirement to be discharged by the relevant statutory body i.e. the relevant highway authority for highway related matters. The Development Consent Order (DCO) is not a planning permission and there is no need for all requirements to be processed by the local planning authority. In respect of Requirements relating to 'highway accesses' the Applicant notes that the Hornsea Four, East Anglia ONE North and East Anglia TWO Orders each secure that the requirement is discharged by the relevant highway authority. Similarly in respect of Requirements relating to 'operational drainage management' the Applicant notes that the Hornsea Four DCO East Anglia ONE North and East Anglia TWO Orders each secure that the discharging body is the lead local flood authority. The Applicant therefore considers the approach taken in the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3) to accord with other recently made offshore wind farm DCOs.

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		appropriateness of not submitting to the relevant planning authority.	
DCO 1.27	The Applicant	*Schedule 1, Part 3 New Requirements* Historic England [REP1-055], Horsham DC [REP1-044] and West Sussex CC [REP1-054] have requested new Requirements on the following matters: • An Air Quality Plan to be based on the Air Quality Management Plan;	The Applicant has provided an **Outline Air Quality Management Plan** (**Document Reference 8.62**) at Deadline 3 with which stage specific Air Quality Management Plans shall accord, and this has been updated in Requirement 22 (5) (i) of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3).
		• Construction Communication Plan;	The Applicant has added a new requirement in the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3) Requirement 34 for the Construction Communications Plan.
		• Avoidance of use of the Storrington Air Quality Management Area, in line with Commitment C-158 of the Commitments Register [REP1-015] and included within the outline Construction Traffic Management Plan (OCTMP) [REP1-010]. Provide a response and if necessary, amend the draft DCO [REP2-002] accordingly and Commitments Register.	Regarding the Storrington Air Quality Management Area (AQMA), the Applicant refers to the detailed response to the Examining Authority's Written Question **AQ1.2**.
DCO 1.28	The Applicant	*Schedule 10* Provide an updated to negotiations and a timetable for the insertion of agreed Protective Provisions into Schedule 10 of the draft DCO [REP2-002].	The Applicant notes that it is not possible to give an exact timetable for updating the Draft Development Consent Order (dDCO) to include protective provisions in an agreed form as this will depend on the engagement received from the various statutory undertakers. The Applicant has provided an update on the protective provisions as set out in the table below:

Protective provisions for the benefit of	Status of discussion between the parties
National Grid Electricity Transmission (NGET)	The draft dDCO was updated at Deadline 2 to include an amended form of NGET's template protective provisions in a form which is acceptable to the Applicant. The Applicant is engaged in ongoing discussions and negotiations with NGET to agree these and anticipates being in a position to update the dDCO to include final and agreed protective provisions in the dDCO shortly, and certainly within the timeframe of the Examination.
Scottish and Southern Electricity (SSE)	The draft dDCO was updated at Deadline 2 to include an amended form of SSE's template protective provisions in a form which is acceptable to the Applicant. The Applicant is engaged in ongoing

Ref	Question To:	Question	Applicant's Response	
				discussions and negotiations with SSE to agree these, with few points now outstanding between the parties, and anticipates being in a position to update the dDCO to include final and agreed protective provisions in the dDCO shortly, and certainly within the timeframe of the Examination.
			Southern Gas Networks (SGN)	The draft dDCO was updated at Deadline 2 to include an amended form of SGN's template protective provisions in a form which is acceptable to the Applicant. The Applicant is engaged in ongoing discussions and negotiations with SGN, with few points now outstanding between the parties, to agree these and anticipates being in a position to update the DCO to include final and agreed protective provisions in the dDCO shortly, and certainly within the timeframe of the Examination.
			Network Rail Infrastructure Limited	Discussions are ongoing between the parties to deal with the overarching framework agreement which will govern the protective provisions as well as the asset protection arrangements, with few points now outstanding between the Applicant and Network Rail. The Applicant envisages that the version of the provisions in the dDCO will be updated once that framework agreement has been finalised during the course of the Examination.
			National Highways	The Applicant is engaged in ongoing discussions and negotiations with National Highways in respect of suitable protective provisions and anticipates being in a position to include final and agreed protective provisions in the dDCO shortly, and certainly within the timeframe of the Examination. The Applicant updated the dDCO at Deadline 2 to include an amended version of National Highways template protective provisions to reflect the specific circumstances of the Proposed Development and its impacts on the SRN.
DCO 1.29	The Applicant	*Schedule 14* Horsham DC [REP1-044], SDNPA [REP1-049] and West Sussex CC [REP1-054] raised concerns with the 56-day time limits set out in paragraph (1)(3)(a) and (b) and the 15-day time-limit set out within paragraph 2(3). In respect to the latter, the ExA notes the Applicant's response at Deadline 2 [REP2-] and the addition to paragraph 2(2)(a) and (b) to the draft DCO [REP2-002] where the time-period has been extended to 20 days where the discharging authority must consult with a third party. The ExA is not clear how this will work practice; who would decide whether there is a third party to consult and how this would be controlled. The ExA further questions whether the additional five-day request by the local	Paragraph 1(3)(a) of Schedule 14 is consistent with the corresponding provision in schedule 16 to The East Anglia TWO Offshore Wind Farm Order 2022/433 and the East Anglia ONE North Offshore Wind Farm Order 2022/432. In relation to paragraph 1(3)(b), it should be noted that the period given in the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3) is in excess of the corresponding provision in the East Anglia TWO and East Anglia One North Orders, which provide for 42 days. The equivalent provision in a number of other made Orders such as The Hornsea Four Offshore Wind Farm Order 2023/800, The Lake Lothing (Lowestoft) Third Crossing Order 2020/474, The A428 Black Cat to Caxton Gibbet Development Consent Order 2022/934 and The Boston Alternative Energy Facility Order 2023/778 require a decision to be made within 8 weeks beginning with the day following either the date on which an application is received or the receipt of additional information which has been requested. The time limit set out in paragraph 2(2)(a) and (b) is in excess of that given in the corresponding provision of a number of other made Development Consent Order (DCOs) which provide for 20 business days, with no extension where there is a need to consult with a third party. For example: The Hornsea Four Offshore Wind Farm Order 2023/800, The Lake Lothing (Lowestoft) Third Crossing Order 2020/474, The Boston Alternative Energy Facility Order 2023/778 and The A428 Black Cat to Caxton Gibbet Development Consent Order 2022/934. Accordingly, the time limits set by the Applicant reflect those commonly included in recently made DCOs. The additional time will apply in relation to requirements which provide on the face of the Order for the determining body to make a decision following consultation with a third party.	

Ref	Question To:	Question	Applicant's Response
		authorities would cause any serious detriment to the delivery of the Proposed Development, should the Secretary of State decide to make the Order. Respond, and consider amending Schedule 14 to 20-days.	
DCO 1.30	The Applicant	*Schedule 16* The Applicant is asked to check the documents contained within the certified documents and in particular the referencing for the Environmental Statements, which are listed as being EL reference APP-041 to APP-222, but where there are updates to the ES at subsequent deadlines.	Schedule 16 will be updated in the next iteration of the draft DCO to include reference to updates to the ES.
DCO 1.31	The Applicant	*Schedule 16* The Commitments Register [REP1-015] is not a certified document in Schedule 16 of the draft DCO [REP2-002] and is therefore not secured. The Applicant states in its response at Deadline 2 [REP2-026) that the Commitments Register is not intended to be a certified document in the draft DCO but that each of the Commitments itself is secured through the draft DCO or through other certified documents. The ExA is unclear how this is so, and indeed why the Applicant has taken a different approach to securing some Commitments through certified documents but not others. Given the importance of the Commitments to the delivery and mitigation of the Proposed Development, the ExA considers the Commitments Register should be a certified document within Schedule 16. Respond and amend accordingly.	It is not intended that the **Commitments Register** **[REP1-015]** (updated at Deadline 3) is secured as certified through Schedule 16. It is not a document that is referred to in the Development Consent Order (DCO) itself and therefore it is not required to be certified as a final copy. The **Commitments Register** **[REP1-015]** (updated at Deadline 3) captures the mitigation measures that will be implemented as part of the delivery of the project, and the final four columns indicate where the commitment has been secured. This is either through provisions in the DCO itself, through the discharge of requirements or of conditions imposed through the deemed Marine Licences including submission of control documents the contents of which must be in accordance with the terms of a certified document, or compliance with other consents and licences which will require to be applied for in the delivery of the project. The certification of the commitment register itself will not secure delivery of mitigation. The Register is provided as an aid to interested parties, to collate commitments from separate documents, and demonstrate the development of these.
DCO 1.32	The Applicant	*Prospective Schedule 17* Should the Secretary of State be minded to accept that Adverse Effect	The Hornsea Four Offshore Wind Farm Order 2023/800 has its certified documents schedule as Schedule 15 and Schedule 16 sets out the compensation to protect the coherence of the National Site Network. The same approach has been taken in The East Anglia TWO

Ref	Question To:	Question	Applicant's Response
		on Integrity to the Flamborough and Filey Coast SPA cannot be excluded, the Applicant confirmed at ISH1 [EV3-001] that a standalone Schedule 17 [PEPD-017] should be inserted into the DCO, should the Secretary of State be minded to make the Order. Schedule 17 would currently sit behind the certified documents Schedule 16, which is normally the final Schedule in a DCO before the Explanatory Note. Therefore, the ExA considers this would be the wrong place for it. Confirm where Schedule 17 would be inserted into a DCO. Consider whether two versions of the final draft DCO should be submitted into the Examination at the final deadline; one with and one without the Schedule 17 wording (in its appropriate location).	Offshore Wind Farm Order 2022/433 and The East Anglia ONE North Offshore Wind Farm Order 2022/432 and so this approach is not without precedent. The Applicant considers it is more appropriate for the proposed Schedule 17 to remain as the potential final schedule of the Development Consent Order (DCO) to avoid any issues with cross references in the document as any further changes are made to its content during the Examination.
DCO 1.33	The Applicant Natural England	*Prospective Schedule 17* Should the Secretary of State be minded to accept that Adverse Effect on Integrity to the Flamborough and Filey Coast SPA cannot be excluded, the Applicant confirmed at ISH1 [EV3-001] that a standalone Schedule 17 [PEPD-017] should be inserted into the DCO should the Secretary of State be minded to make the Order. Natural England [REP1-059] have raised a number of concerns with the wording of this prospective Schedule with suggested amendments and additions. In its response at Deadline 2 [REP2-026], the Applicant states discussions are ongoing including addressing Natural England's concern on the absence of provisions for the end of the lifetime of the project and the compensatory measures. Provide an update to the progress of Schedule 17 and a timescale of when	The Applicant is continuing discussions with Doggerbank South to agree conditions for the proposed artificial nesting structures for kittiwake and will submit an updated Schedule 17 in due course. The Applicant also held a meeting with Natural England to discuss compensation options for kittiwake, razorbill and guillemot on 17 April 2024. As a result of discussions in this meeting, and to allow Natural England additional time to review documents, the Applicant has submitted an updated **Kittiwake Implementation and Monitoring Plan (Document reference: 8.64)** and a **Guillemot and Razorbill Evidence and Roadmap (Document reference: 8.65)** at Deadline 3. The Applicant plans to hold a further meeting with Natural England when they have reviewed the updated documents. This will then inform an update to Schedule 17.

Ref	Question To:	Question	Applicant's Response
		an agreed position will likely be reached.	
Draft DML			
DCO 1.34	MMO	*Schedules 11 and 12* *Deemed Marine Licence* In its WR, the MMO [REP1-056] have set out comments and requested changes, alterations and deletions in respect to: • Part 1 conditions 7-9; • Part 2 conditions 3(1) and 3(5); • Part 2 condition 9(8) • Part 2 condition 10; • Part 2 condition 17; and • Part 2 condition 21. Comment on the responses provided by the Applicant at Deadline 2 [REP2-026].	
DCO 1.35	Natural England	*Schedules 11 and 12* *Deemed Marine Licence* In respect to Part 2 condition 2(6), the Applicant states in its response at Deadline 2 [REP2-026] that further changes to this condition are unnecessary as the condition refers to commencement of the authorised scheme, which is defined in the deemed marine licence by reference to Works No 1 and 2 in Schedule 11 and Work Nos. 3 to 6 in Schedule 12. In respect to Part 2 conditions 11(1)(a) and (c), the Applicant states it will prepare its design plan to take account of micro-siting requirements and that construction method statement will also be required to take account of micro-siting requirements and by subject to approval hence no further amendment is considered necessary.	

Ref	Question To:	Question	Applicant's Response
		Provide a response and if necessary, set out the changes required to the said conditions.	
DCO 1.36	The Applicant	*Schedules 11 and 12 Deemed Marine Licence* In its WR, the MMO [REP1-056] have requested additional conditions in respect maintenance reporting and stages of construction. On the latter point, the ExA has stated in question CM 1.4 that it would be helpful if an Outline Stages and Phasing Plan were submitted into the Examination. Respond and update the DML as appropriate.	The Applicant assumes that the reference to question CM1.4 is intended to be a reference to the Examining Authority's Written Question **COD1.4**. The Applicant has amended the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3) to provide that the Outline Operation and Management Plan will be a certified document. The Outline Operation and Management Plan has been updated at Deadline 3. Please see response to the Examining Authority's Written Question **COD 1.4** in respect of the Applicant's position in respect of phasing of onshore works. Whilst the onshore works are split into stages to assist with the discharge of requirements along the onshore cable corridor, in respect of offshore works the Undertaker will be required to comply with the various temporal and spatial restrictions identified in the Sensitive Features Mitigation Plan to be approved post consent in the delivery of the project. Consequently, it is not considered appropriate for an outline stages and phasing plan to be prepared and submitted to the Examination in respect to the offshore works. The Applicant notes that condition 11(1)(b) of each of Schedules 11 and 12 secures submission of and approval for a construction programme for the offshore works prior to the commencement of the authorised scheme (as defined in each licence).
Legal / side agreements			
DCO 1.37	The Applicant	*S106 Legal Agreements* Provide an update on progress on legal agreements as requested by West Sussex CC [RR-418], SDNPA [AS-006], Horsham DC [AS-010] and Brighton City Council [RR-047].	Heads of Terms documents have been issued to West Sussex County Council, South Downs National Park Authority and Horsham District Council in respect of proposed planning obligations to mitigate or compensate for the impact of the Proposed Development. The request for a financial contribution made by Brighton & Hove City Council is not considered to satisfy the policy test for development consent obligations.
DCO 1.38	The Applicant	*S106 Legal Agreements* Provide a response to the requests by Mid Sussex DC [REP1-046], Arun DC [REP1-039], Horsham DC [REP1-044] and West Sussex CC [REP1-054] that matters concerning BNG will need to be secured by legal agreement.	Requirement 14 (Part 3, Schedule 1 Authorised Project of the **Draft Development Consent Order** **[REP2-002]**) confirms that a biodiversity net gain strategy must be submitted, approved and implemented and that the strategy must accord with the information contained in **Appendix 22.15: Biodiversity Net Gain Information, Volume 2** of the environmental Statement **[APP-193]**. This appendix provides detail as to how the units will be secured. Further information is given by the Applicant in response to the Examining Authority's Written Questions **BD1.3** and **BD1.4**, which confirm that biodiversity units will be secured through s106 agreements between an identified landowner and the relevant local authority or a conservation covenant in accordance with extant Department for Environment, Food and Rural Affairs (Defra) Guidance once appropriate units have been identified and purchased by the Applicant. All biodiversity net gain units purchased by the Applicant to satisfy its commitment to delivery of 10% net gain will require to be registered.

Table 2-5 Land Rights

Ref	Question To:	Question	Applicant's Response
LR 1.1	The Applicant	*The Book of Reference (BoR)* Confirm whether the BoR [PEPD-014] is fully compliant with the Department of Communities and Local Government guidance 'Planning Act 2008: procedures for the compulsory acquisition of land' (September 2013) (DCLG guidance).	The Department of Communities and Local Government (DCLG) Guidance sets out the requirements for a Book of Reference (BoR) at Annex D to the Guidance. This includes (in summary) that: 1. The BoR comprises five 'Parts' and relevant plans; 2. Part 1 should contain the names and addresses for service of each 'Category 1' and 'Category 2' person; 3. Part 2 should contain the names and addresses for service of each 'Category 3' person; 4. Part 3 should contain the names and addresses of all those entitled to enjoy easements or other private rights over land; 5. Part 4 should specify the owner of any Crown interest; 6. Part 5 should specify any land which could be subject to special parliamentary procedure, or which is special category land; 7. The description of each plot of land should include the area in square metres; 8. That each Part of the BoR should record persons' details even though different parts may apply to the same persons; 9. Non-prescribed parts should not be added to a BoR; and 10. The creation and acquisition of new rights should be clearly identified. The BoR should also cross-refer to the relevant articles in the DCO. The Applicant confirms that the **Book of Reference** **[PEPD-014]** is compliant with the DCLG guidance.
LR 1.2	The Applicant	*BoR* Confirm whether there are any other persons who might be entitled to make a relevant claim if the DCO were to be made and fully implemented and should therefore be added as Category 3 parties to the BoR [PEPD-014]. This could include, but not be limited to, those that have provided representations on, or have interests in: noise, vibration, smell, fumes, smoke or artificial lighting; the effect of construction or operation of the Proposed Development on property values or rental incomes; concerns about subsidence or settlement; claims that someone would need to be temporarily or permanently relocated; impacts on a business; loss of rights, e.g. to a parking space or access to a private property; concerns about project financing; claims that there are viable alternatives; or blight.	The Applicant has applied a multidisciplinary approach to the initial identification of potential Category 3 parties. This involved input from specialist compulsory purchase practitioners (Carter Jonas), environmental consultants (Wood/WSP) and the Applicant's project team. As part of the identification and refinement process, the respective subject matter experts combined to: • confirm what could constitute a relevant claim; • advise on matters arising from the construction or operation of the project which may give rise to a claim; • undertake a diligent enquiry exercise on properties where a perceived claim could possibly be made; and • conclude the properties potentially impacted and the likelihood that a valid claim could be made. Subject to satisfying the statutory tests, a Category 3 claimant is entitled to make a 'relevant claim' (as defined in section 57(6) of the PA 2008) for the impact to their property interests during the construction of the works (under section 10 of the Compulsory Purchase Act 1965) and one year after the scheme has opened in connection with the operation of the works (Part 1 of the Land Compensation Act 1973). In respect of impacts caused during the construction works the Applicant has considered the location of the main activities that may give rise to a claim and the type of impact. The activities that may give rise to a claim were identified as vibration associated with construction traffic and noise impacts from HDD and landfall drilling areas. WSP concluded that the effects of construction activities would not be significant and appropriate embedded mitigation measures will be implemented (see the Category 3 Identification Methodology at Appendix 4 of the **Statement of Reasons Appendices 3 - 7** **[APP-024]**).

Ref	Question To:	Question	Applicant's Response
			In respect of the impacts caused by the operation of the works the Applicant has again considered the location of the activity that may give rise to a claim and the type of impact. The activities identified that may give rise to a claim were impacts associated with the operation of the onshore substation and extension to the existing National Grid Bolney substation. The only physical factors that could theoretically foreseeably arise from the operation of the above ground infrastructure, are air quality, noise and vibration. WSP concluded that the effects which could arise from such activities were not significant (see Appendix 4 of the **Statement of Reasons Appendices 3 - 7** **[APP-024]**. Having reviewed the activities and the potential impacts the Applicant then considered the potential for parties to make a claim for compensation and where relevant included them in the **Book of Reference** **[PEPD-014]** under Part 2. Only a limited number of Category 3 parties were identified, the majority of whom already have land interests within the Order Land. No parties with land interests outside of the Order Land were identified as having the potential to bring a Part 1 Land Compensation Act 1961 Claim. The BoR is split into Parts 1-5. Detailed explanations of these can be found in the introduction of the document **[PEPD-014]**. Part 2 of the BoR contains the names and addresses (if known by the Applicant) of each person whose land interest is not already directly affected by the Order (i.e. their interest is outside the Order Limits) as a Category 3 interest, but who the Applicant believes may be entitled to make a relevant claim. The Applicant considers that the following persons may also be entitled to make a relevant claim: a. Certain Category 1 'Owners' (where they have a category 2 interest elsewhere in the Order Limits). b. Certain Category 1 'Lessees and Tenants'. c. Certain Category 2 interests for land within the Order Limits. However, given that their details have already been included in Part 1 and Part 3 of the BoR they have not been repeated in Part 2. The Applicant undertook diligent inquiry to identify the parties in Part 2 of the BoR who would, or might be entitled to, make a relevant claim. Ongoing landowner engagement and Land Registry title refreshes from DCO submission throughout the examination period will identify any new land interests who will be added to the tracked change BoR. They may replace existing land interests who have been identified as a Category 3 party (owning the specific land outside of the Order Limits) and may be entitled to make a relevant claim. As of Deadline 3, the Applicant confirms there have been no ownership changes within these areas. Therefore, the Applicant does not consider there are any further parties who need to be included. The Applicant will continue to review and make the necessary updates to the BoR until the end of Examination where changes in land ownership may arise to Category 3 parties. In any event, the Applicant notes that the following matters listed in the question are not circumstances which could give rise to a 'relevant claim':

Ref	Question To:	Question	Applicant's Response
			• claims that someone would need to be temporarily or permanently relocated; • impacts on a business – in this respect the Applicant notes that a claim must be in respect of a diminution in value of the claimant's land interest. This does not include business losses; • concerns about project financing; • claims that there are viable alternatives; • or blight.
LR 1.3	The Applicant	*Funding Statement (FS)* Noting paragraphs 3.9 and 3.10 of the FS [APP-025], confirm whether the Applicant been made aware since its submission of: a) Any persons who meet the statutory requirements for a blight notice; b) Any parties intending to serve a Blight Notice; or c) Any attempts to sell any of the affected land or property that has resulted in it only being able to be disposed of at a significantly lower price than it would have been expected to sell.	Since submission of the Application the Applicant has been made aware through the course of consultation and negotiations of a small number of affected parties who may satisfy the qualification requirements and would be eligible to submit a blight notice under s150 Town and Country Planning Act 1990. We have not been made aware of these parties' or any other parties' confirmed intention to service a Blight Notice on the Applicant. The Applicant understands that as at Deadline 3 there are 3 parties currently marketing a Property affected by the Applicant's proposal. The Applicant understands that one property has been advertised on the open market since February 2024 so it not yet apparent that the only interest that has been received is at a price substantially lower than that for which it might reasonably have been expected to sell had the land not been included for compulsory acquisition in the Order. A further Property was marketed for six months in 2023. Whilst there may be some parties who are eligible to serve a blight notice, that does not necessarily mean that the grounds on which the blight notice is served are capable of being upheld. The Applicant has considered whether these or any of the acquisitions give rise to the potential for the acquisition of part of a house, building or factory, causing material detriment to the whole, or the acquisition of part of a park or garden belonging to a house, seriously affecting the amenity or convenience of the house, and considers that the required tests for owner/occupied land caused by the Proposals could not be met given the general temporary nature of the severance. It is therefore expected that most blight notices could be successfully countered by the Applicant. There are no houses, factories or buildings that the Applicant is aware of where the acquisition of rights causes a material detriment to the property itself, and no gardens are affected which might seriously affect the amenity of the house to which that garden belongs. Furthermore, it is the opinion of the Applicant that there are no retained areas of farm land that would not be reasonably capable of being farmed by itself or in conjunction with other land over the reinstated onshore cable route corridor Consideration is being given by the Applicant to any mitigation measures or accommodation works that could alleviate potential temporary impacts including provision of noise barriers and appropriate temporary provision of access. Notwithstanding the above, as explained by the Applicant in Paragraph 3.11 of the **Funding Statement** **[APP-025]**, there is sufficient provision by way of contingency within the property cost element of the Funding Statement that would cover for any compensation liability arising from a successful claim for statutory blight.

Ref	Question To:	Question	Applicant's Response
LR 1.4	Affected Persons, Interested Parties	*BoR, Statement of Reasons (SoR), Land Plans Onshore and Land Rights Tracker* Inform the ExA whether there are any inaccuracies in the BoR [PEPD-014], SoR [APP-021], Onshore Land plans [PEPD-003] or the Land Rights Tracker [REP2-007]? If so, please set out what these are and provide the correct details.	Whilst not directed at the Applicant, any updates to the **Book of Reference** **[PEPD-014],** have been reflected in the **Change Log for Book of Reference** **[REP2-009]**. Any updates that are required will be applied to the documents in the various revisions throughout the examination process.
LR 1.5	The Applicant	*BoR* Provide a summary of where the Applicant has not yet been able to identify any persons having an interest in the land, including any rights over unregistered land. Explain what further steps will be taken to identify any unknown rights during the Examination.	Through the process of diligent enquiry, and engaging with landowners, the Applicant has endeavoured to ascertain who owns the land. The Applicant carried out the following in relation to unregistered land to identify the owners. On-site notices left as part of the initial contact land referencing and requirements under s42, s44, s48, s56 and s57 of the PA2008: • Publicity of the Proposed Development and Application as part of the requirements under s48 of the Planning Act 2008 • Analysis of information from the Land Registry relating to owners of adjacent properties, to see if any likely pattern of landownership can be established and verified. • Regular contact with other landowners and occupiers during which enquiries were made about unregistered land. A review of unregistered locations against Land Registry Map Search has been undertaken ahead of Deadline 3, and there have been no further changes. A Land Registry SIM search will be conducted towards the end of examination, which will establish if any new titles have been registered in the Order Limits, which could have previously been unregistered land. Current completely unregistered plots listed in the BoR that aren't adopted highways or drains containing subsoil interests are: 1/20, 4/25, 5/3, 5/4, 5/7, 5/9, 7/21, 7/27, 7/34, 12/13, 16/4, 17/9, 19/10, 21/7, 21/27, 25/9, 27/7, 28/23, 29/5, 29/11, 29/15, 32/13, 33/3, 34/13. These have been checked and The Applicant can confirm an ownership update has been made to plot 16/4. This is a landowner with an existing interest in land within the proposed DCO Order Limits. This update will be reflected in the **Book of Reference** **[PEPD-014]**, **Change Log for Book of Reference** **[REP2-009]** and **Land Rights Tracker** **[REP2-008]**. Any owners that have come forward who own land or claim to own land that is unregistered have been added to the **Book of Reference** **[PEPD-014]** as owners or reputed owners. The Applicant will continue with its diligent enquires during the Examination to try to establish the owners of unregistered land. In the event of finding additional landownership information, the Applicant will update the BoR and submit it to the Examining Authority at each required Deadline. The Applicant will also inform any such persons of their rights to apply to become an Interested Party under section 102A PA 2008.
LR 1.6	The Applicant	*BoR* Explain what assurance and evidence the Applicant can provide of the accuracy of the land interests identified as submitted and can the Applicant indicate whether there are likely to be any changes to the land interests, including the	The Applicant has carried out diligent enquiry to identify the information contained within the **Book of Reference** **[PEPD-014]**, as set out in Appendix 3 to the **Statement of Reasons** 'Land Referencing Method Statement' **[APP-024]**.

Ref	Question To:	Question	Applicant's Response
		identification of further owners / interests or monitoring and update of changes in interests.	In addition, since 2020, the Applicant has actively engaged in discussions with the landowners and occupiers within the Order Limits to arrange access for surveys and take forward negotiations for options to acquire, by agreement, the land and interests in land necessary for the Proposed Development. This engagement has allowed the Applicant, via its land team, to review and verify landownership information. The Applicant, via its appointed land referencers (Carter Jonas) will continue to ensure that the BoR is kept up to date both through that engagement with landowners and their appointed advisors, and through conducting refreshes of the Land Registry data. This forms part of the diligent enquiry process the Applicant is continuing to carry out (see Appendix 3 of the **Statement of Reasons Appendices 3 - 7 [APP-024]**) to identify any changes to landowners and interests. This process is a combination of obtaining refreshed data from the Land Registry to show any changes in ownership of registered property with the Order Limits. The Applicant's land team continues to have regular contact with landowners and occupiers, which allows them to verify land ownership on a regular basis. In addition, the communication channels in various documents and on the Applicant's project website have been monitored, and any communication has been followed up to see if owners of unregistered land can be identified. The Applicant envisages that there will continue to be changes to the ownership and occupation of the Order Land during the Examination. Areas of land that were unregistered, may also become registered with Land Registry during the duration of the project. The Applicant will monitor this as detailed in response to Examining Authority's Written Questions **LR 1.5**. Where new or changes in landownership are identified, the Applicant will write to the party to inform them about the Application and to make any such persons aware of their rights to apply to become an Interested Party under section 102A PA 2008.
LR 1.7	The Applicant	*Changes to the Application* Explain any envisaged changes to the Application which might engage The Infrastructure Planning (Compulsory Acquisition) Regulations 2010.	The Applicant confirms that it does not envisage making any changes to the Application which might engage the Infrastructure Planning (Compulsory Acquisition) Regulations 2010.
LR 1.8	The Applicant	*The Case for Compulsory Acquisition (CA)* Paragraph 11.2.15 of the SoR [APP-021] states that the Applicant considers that there is a compelling case in the public interest for CA. a) Explain what assessment, if any, has been made of the effect upon individual Affected Persons and their private loss that would result from the exercise of CA powers in each case;	The **Statement of Reasons** (SOR) **[APP-021]** sets out that the Applicant is satisfied that the conditions in s122 of the Planning Act 2008 (the Act) are met and that tests within the Compulsory Acquisition Guidance are satisfied, and there is a compelling case in the public interest for the Compulsory Acquisition identified as necessary to deliver the scheme. All the land subject to compulsory acquisition powers is required for the purposes of the Proposed Development, to facilitate the Proposed Development, or for purposes that are incidental to the Proposed Development. All of the land subject to compulsory acquisition powers is necessary to construct, operate, protect and maintain the scheme and the extent of land within the Order Land is proportionate and is no more than is reasonably necessary. In forming the view that there is a compelling case in the public interest for the authorisation of compulsory acquisition powers, the Applicant has had regard to the factors such as the following: • Residential properties are not being acquired;

Ref	Question To:	Question	Applicant's Response
			• No residents are being displaced from their properties; • Although agricultural land is being acquired no farms or businesses are being displaced or extinguished; • No other types of business are being displaced or extinguished • The temporary impacts on farms, businesses or residential properties during construction will be limited; • Mitigation measures set out in the **Outline Code of Construction Practice** Parts A or B **[PEPD-033]** (updated at Deadline 3) and the **Commitments Register** **[REP1-015]** (updated at Deadline 3) will reduce the impact of the Proposed Development on land retained by Landowners; • The **Outline Soil Management Plan** **[APP-226]** (updated at Deadline 3) sets out requirements for ongoing monitoring and auditing post construction to verify land is reinstated to the required standard; and • The Outline Operational Drainage Plan **[APP-223]** sets out the requirements for stage specific drainage plans to ensure the effective ongoing operation of drainage of land during construction and operation. Feedback from Affected Persons has been received by the Applicant further to landowner engagement, non-statutory and statutory consultations. Where potential impacts have been raised by Affected Persons and proposed project amendments or refinements (refinements being more limited changes within the proposed Order Limits) have been communicated and submitted to the Applicant, these have been assessed by the Applicant. The potential impacts on Affected Persons' use of the land have been weighed alongside the environmental, engineering and costs impacts using a BRAG assessment as outline in response to the Examining Authority's Written Question **LR 1.13** and an overall decision on the proposed change or refinement taken by the Applicant. Where changes were considered justified, having regard to that BRAG assessment amendments to the project were made. Reasons why proposed changes were rejected related to where it was established that there were likely greater impacts on environmental receptors (including for example amenity of nearby residents and effects on ancient woodland) and/ or would lead to additional engineering and cost impacts. The changes set out in Table 1 of **Appendix B LR: Changes further to Affected Persons representations** (of this document) were made to the onshore cable land requirements pursuant to the assessments carried out. Further detail on the Applicant's approach to the assessment of change requests can be found in **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** and in response to the Examining Authority's Written Question **LR1.13** below. The Applicant believes all residual impacts upon Affected Persons are compensatable under the Compulsory Purchase Compensation Code. Landowners whose land is compulsorily acquired are entitled to compensation under the Compensation Code. A first principle of the Compensation Code is the principle of equivalence - that landowners are, as far as possible, to be placed in a position equivalent to that which they would have been had the compulsory purchase of their land not occurred.
		b) Explain how it has been demonstrated within the application that the public benefits of the scheme outweigh any residual adverse effects including private loss suffered by individual landowners and occupiers; and	The benefits of the Proposed Development are comprehensively set out in the **Planning Statement** **[APP-036]** and section 7 of the **SoR** **[APP-022]**. Together, they demonstrate that there is a very strong and compelling case in the public interest for the Proposed Development to be delivered. Notably, the Proposed Development will contribute materially towards:

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			• meeting the urgent national need established in National Policy Statement ("NPS") EN-1 for new renewable/low carbon electricity supply in the UK, including offshore wind which has been identified as a critical national priority ("CNP") in Draft NPS EN-1 and Draft NPS EN-3; • meeting increasing energy demand, providing enhanced energy security and supporting UK Government priorities in relation to economic development; and • the achievement of the UK Government's climate change commitments and carbon reduction objectives. Additionally, it will deliver a range of environmental, social and economic benefits including biodiversity net gain, jobs creation during all phases of the project, and investment. The Applicant considers that these public benefits outweigh any residual adverse impacts on individual owners and occupiers. The land identified as being required for the scheme has been based on environmental and engineering requirements and is the minimum necessary to construct, maintain and protect the Proposed Development. The purpose for which each plot of land is required is legitimate and is set out within Appendix 1 to the **Statement of Reasons** **[APP-022]**
		c) Demonstrate how such a conclusion has been reached and how the balancing exercise between public benefit and private loss has been carried out.	The Applicant has, as part of settling the Order Limits, **Onshore Works Plans** **[PEPD-005]** and **Onshore Land Plans** **[PEPD-003]**, reviewed each plot individually in order to challenge the extent of the proposed land take and the proposed type of acquisition sought, and to refine the proposals where possible to either reduce the area of land required or limit the type of compulsory intervention without compromising the rights required to deliver the Proposed Development including the required mitigation. This plot-by-plot review included consideration of the following: • The requirement to ensure that only land necessary for the Proposed Development was included within the Order Land; • The objective to minimise the extent of areas of freehold acquisition; • Seeking to ensure that the proposed acquisition allowed for the continued use of retained land, and (with the exception of the two limited areas of freehold acquisition) of the land subject to temporary or permanent acquisition following reinstatement; • A review of the land use and ownership of land, including any development proposals, to consider the impacts of acquisition and/or temporary possession of the land on landowners and occupiers within the Order Land and its neighbours. • Where practicable, to have regard to existing ownership or physical boundaries, and to make use of existing access roads and tracks. • Reducing severance so as to minimise inaccessible or unworkable areas of land during construction or operation of the project. • The proposed approach of undertaking the majority of the works under temporary possession powers where possible so that the exercise of permanent powers of acquisition is minimised.

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			• Feedback from engagement and consultation with Affected Parties, leading to design changes. For example those changes set out in Table 1 of **Appendix B LR: Changes further to Affected Persons representations** (of this document). The above process weighed the requirement for individual plots against the anticipated impacts of the proposed acquisition and the Proposed Development. The Applicant is satisfied that the powers of compulsory acquisition and temporary possession sought through the DCO are necessary, proportionate, and justified.
LR 1.9	The Applicant	*The Case for Compulsory Acquisition (CA)* Table 8-1 of the Cable and Grid Connection Statement [APP-034] sets out the maximum onshore cable corridor (OCC) assessment assumptions. This indicates that the maximum temporary construction corridor width would be 40 meters (m), with a permanent easement with of up to 25m. The ExA notes that there are locations along the OCC where the 40m width is exceeded. Provide: a) A list of all such locations; b) b) The justification at each location for the increase in width; and	<u>Introduction and Environmental Statement</u> The Applicant confirms that the typical onshore cable construction corridor is proposed to be 40m for open cut sections of the cable corridor. An onshore construction corridor width of up to 40m has been assessed in the Environmental Statement as described in paragraph 4.5.8 of **Chapter 4 – Proposed Development, Volume 2** of the ES **[APP-045]** and illustrated in Graphic 4-19 therein. As can be seen from this figure, the corridor is anticipated to comprise of the cable trenches, the haul road and subsoil and topsoil storage. Paragraph 4.5.8 also explains the instances where the construction corridor would be wider due to the wider spacing requirements of the cables and potential need for obstacle avoidance as detailed below. The associated trenchless crossing compounds assessed of 50m x 75m and 120m x 100m are also wider than the typical cable corridor. These compounds are described and secured in Section 4.3 in the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** (updated at Deadline 3) and by Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). The stage specific CoCPs will include descriptions of works outside the standard working corridor width of 40m which could include trenchless crossings, diversions around other obstacles, ecological and archaeological mitigation. The stage specific **Construction Method Statement** **[APP-255]** will also include the final location and width through the relevant stage, as per Requirement 23 (f) of **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). For the connection from the onshore substation at Oakendene to the National Grid Bolney substation, where two cables are required, open cut sections of the corridor will not exceed 30m in width as per paragraph 4.5.10. The footnote to Table 8-1 of the **Cable and Grid Connection Statement** **[APP-034]** states that a typical permanent corridor easement is likely to be 20m, but this may vary according to local conditions. A maximum permanent corridor of 25m (excluding HDD crossing locations) has been assessed in the Environmental Statement as a reasonable worst-case scenario. A wider permanent easement might be required where the cable spacing is wider due to the cable rating requirements or obstacle avoidance reasons set out in detail below. <u>Construction corridor and Permanent Cable Corridor Widths</u> The Statement of Reasons 6.9.29 confirms that the standard trenched cable construction corridor will be up to 40m wide and consist of the trenches in which the cable circuits will be installed, excavated material (soil) and a temporary construction haul road. The temporary construction haul road will enable the transportation of plant used for topsoil stripping, subsoil excavation and for delivery of cable duct and cement bound sand (CBS) fill material. This soil will be stored in bunds within the temporary construction corridor. It is anticipated that a mechanical excavator will be used for these activities. Figure 4 of the **Statement of Reasons** shows a cross-sectional diagram of a 'standard' trenched (Non-HDD) cable construction corridor **[APP-021]**

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Flexibility is required for the siting of the onshore construction corridor within the Order Limits to allow for ground investigation surveys, detailed cable route design, and pre-construction environmental surveys and mitigation. As detailed below this would be communicated to the LPA via the appropriate stage specific management plan.

As noted at paragraph 6.9.21 of the **Statement of Reasons** **[APP-022]**, there are two sections of the onshore cable corridor at Michelgrove and Sullington Hill where the presence of further constraints and uncertainty in ground conditions result in a particularly enlarged area within the Order Limits. As explained in the **Cable and Grid Connection Statement** **[APP-034**] and with further detail in response to LR1.24, the onshore cable corridor will be selected following pre-construction ground investigation and engineering design works.

The Applicant expects there to be other exceptions to the requirement for a typical 40m wide construction corridor at specified locations as explained in the Statement of Reasons paragraph 6.9.30 **[APP-255]**. Within the Order Limits wider sections of construction corridors are likely to be required to facilitate:

- trenchless crossings – shown the COCP plans but relevant to 1,2,3,4,5,6,7,10,11,15,18,19,20,21,22,23,25,26,27,30,31,32,33 and 34 of the **Onshore Land Plans** **[PEPD-003]**
- areas where soil storage is required outside of the flood plain and areas where soil is stored from locations where the 40m corridor width cannot be implemented – see sheets 1,2,3,4,28 and 29 of the **Onshore Land Plans** **[PEPD-003]**
- the Landfall; sheets 1 of the **Onshore Land Plans** **[PEPD-003]**

The provision of flexibility required in the wider onshore cable corridor locations at trenchless crossing points does not mean that all of the space shown within the Order Limits will be required for the permanent cable corridor. However, a wider cable construction corridor width will be required to implement a trenchless crossing design that takes account of technical requirements which will be identified from site investigations and the final electrical design of the project (including cable rating requirements and thermal resistivity calculations). Spacing between cable circuits must be larger at trenchless crossings than in areas of open cut trenching for the reasons set out below.

Trenchless Crossings

The Crossing Schedule in Appendix A of the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) identifies trenchless sections of the cable route and the trenchless compound locations along the cable route; these drawings are indicative and show maximum scenarios for environmental assessment, (not route options). Where the Crossing Schedule notes a trenchless crossing, the cable corridor will be wider for the following reasons:

- Cable Rating – cable separation distances at trenchless crossings of the proposed development will be confirmed at the detailed cable design stage. These are expected to be wider than the open cut trench separation of 5m. 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 trenchless crossing 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 (e.g. existing services), whilst spacing will depend on the nature and condition of the ground at that depth and its ability to absorb and transfer heat away from the cables. The permanent easement corridor will include the cable infrastructure and a suitable protection area around

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the cables. The greater cable spacing has a knock-on effect on the arrangement of trenchless crossing entry and exit compounds, cable alignment and contingency requirements and thus the construction corridor width for the adjoining open cut trenched sections of the cable construction corridor; and

- Compounds – Trenchless compounds are limited to a maximum footprint of 75m in length and 50m in width; 120m in length and 100m in width at the landfall as set out in **Appendix 4.3 Proposed Development Parameters, Volume 4** of the Environmental Statement **[APP-124]**.

Soil Storage

Identified areas for soil storage from construction in the areas with Flood Risk and at Landfall are specified on the **Onshore Works Plans** **[PEPD-003]** and identified as Works No 11. This is in line with commitment C-131 in the **Commitments Register** **[REP1-015]** (updated at Deadline 3). These locations are set out in the list below:

- At the Landfall location, north-west of "The Mill" Onshore Land Plan Sheet 1;
- At the main construction compound at Climping Onshore Land Plan Sheet 2;
- At the Littlehampton Railway Junction, West of Brook Barn Farm Onshore Land Plan Sheet 3;
- West of Lyminster near Church Farm Onshore Land Plan Sheet 4;
- At Bines Green, south of Bines Farm Onshore Land Plan Sheet 28; and
- At the crossing of the South Downs Link path, South of Partridge Green Onshore Land Plan Sheet 29.

Additional Areas with requirement for increased temporary construction corridor width

Additional areas of wider construction corridor width may be identified during detailed design. These could be required for:

- Implementation of mitigation, such as reduced corridor width through areas of sensitive environmental, archaeological or ecological receptors. Soil storage from these reduced width areas would have to be compensated for in other locations along the onshore cable route; and
- To overcome constraining technical obstacles along the cable route, the implementation of narrow construction corridor width may be required. Soil storage required for these reduced width areas would have to be located in other locations along the onshore cable route.

The onshore construction corridor width in these locations will be determined during the detailed design stage following ground investigations and pre-construction surveys. The potential powers within the Order limits are drawn to facilitate this.

As noted above the onshore construction corridor will be communicated to the LPA through a stage specific management plan (Construction Method Statements) in accordance with the **Outline Code of Construction Practice** **[PEPD-033]** (updated at deadline 3) which requires the locations which deviate from the standard 40m construction corridor to be identified.

Permanent Cable Corridor Easement

The expected corridor width for the permanent cable easement is likely to be 20m, but this may vary according to local conditions. As noted above a maximum value of 25m has been assessed as a reasonable worst-case

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			scenario in the Environmental Statement but it is acknowledged that the permanent easement will be wider at trenchless crossing locations for the reasons noted above.
		c) Where this is due to uncertainties in design and or ground conditions how this is accounted for in considering the impact on Affected Persons and their interests and the balancing exercise between public benefit and private loss.	The impact of the Proposed Development on Affected Parties has been reduced as far as reasonably practicable. Consideration was given to the impacts of the Proposed Development on land holdings that would be affected during construction and operation, taking into account the nature of the land use and potential severance impacts through an iterative design process. Design updates and improvements have been made, informed by stakeholders and public consultation. The Applicant has selected the cable corridor further to consideration of the identified land use impacts, alternatives and refinements put forward by Affected persons who were consulted on draft Works plans in the consultations carried out in July- Sept 2021, October-Nov 2022 and Feb- May 2023. The Works Plans identified the maximum extents of areas required for the landfall locations, dedicated soil storage only areas and the wider areas of Order limits for trenchless crossings. The cable construction corridor routeing (OCC) decisions have taken into account the impact of the additional land take required for the landfall, soil storage and widening at trenchless crossing locations as set out in response to LR 1.9 a and b above. Trenchless crossing locations have been communicated to landowners through consultation documents and engagement. As described in the **Statement of Reasons** **[APP-021]**, (see paragraphs 9.11.8-9.11.9) the Applicant intends to exercise the order powers in a proportionate manner which will minimise the extent of land over which permanent rights will be required. Construction of the Proposed Development will be facilitated by temporary possession powers wherever practicable to enable the Applicant to take possession of the wider circa 40m cable construction corridor (OCC) and then only exercise permanent compulsory acquisition powers over the narrower circa 20m permanent easement corridor (with the exception of trenchless crossings as explained above). Land which is no longer required for the Proposed Development after construction has completed will be reinstated in accordance with Section 2.15 of the **Outline Construction Method Statement** **[APP-255]** and possession will be returned to the land owner. The consideration and balancing of impacts on private interests held by Affected Persons has taken into account: • The objective of undertaking further survey and design work to identify a narrower onshore construction corridor before construction commences. • the nature of the likely construction works required and likely impacts on land use including requirements and impacts from haul roads, trenchless crossing compounds and soil storage areas. • the likely length of the construction works. • mitigation measures set out in the Outline Code of Construction Practice **[PEPD-033]** (updated at Deadline 3) and Commitments Register **[REP1-015]** (updated at Deadline 3) and residual ability to continue operations and management. The Applicant has appointed experienced specialist advisors, Carter Jonas, to assist with its engagement and negotiation of Key Terms and to discuss updates to Proposed Development design. The requirements for the proposed construction corridor (OCC), permanent easement and associated accesses thereto which are located

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			within the Order Limits have been communicated by Carter Jonas and set out to landowners in engagement correspondence and key terms documents. The approach to the powers in the **Draft Development Consent Order** [**REP2-002]** (updated at Deadline 3), both permanent and temporary, is consistent with the approach taken in the Key Terms for the Option area, construction areas, permanent easement and accesses. Where already identified by the Applicant, details of the requirement to utilise, on a temporary basis, areas of land outside the proposed construction cable corridor (OCC) for additional construction areas with associated additional construction area payment and rights of access in connection with the Proposed Development have been discussed with Affected Persons and their agents. At all times, the Applicant and/or its advisors have sought to provide clear responses to questions raised by Affected Persons and have been willing and available to meet parties and/or their agents to progress discussions, whether in person, on site or by virtual meetings. As detailed within the first update of the **Land Rights Tracker** **[REP2-008]** the Applicant has taken pro-active steps to engage with Affected Persons through formal consultation and informal engagement to understand the direct and indirect impacts on them and the mitigation measures that may appropriately be implemented during construction which has helped to shape the proposals and where appropriate enabled changes to designs to minimise the private loss. The Applicant has sought to limit the disruption caused by temporary and permanent works which would be required to facilitate the delivery of the Proposed Development. Alternatives to compulsory acquisition: negotiated agreements, alternative sites and modifications to the Proposed have been considered. The extent of the Order limits is reasonably necessary for the construction, operation and maintenance of the Project, which will deliver significant public benefits, and therefore any interference with private rights is proportionate and necessary. However, the Applicant will seek to engage further with Affected Persons regarding detailed construction cable working corridor refinement, construction access design and accommodation works in accordance with **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** (updated at Deadline 3) so as to mitigate the impact that the project may have on parties who could be affected by the proposed works. The potential impacts on agricultural land and soil taking into account the subsequent restoration and reinstatement of land, where utilised on a temporary basis following installation of the cable, have been assessed in **Chapter 20: Soils and agriculture, Volume 2** of the **ES [APP-061].** It has been concluded that there are unlikely to be significant adverse impacts from the Proposed Development. A range of environmental measures within the **Commitments Register** **[REP1-015]** (updated at Deadline 3) are embedded as part of the design to remove or reduce significant environmental effects as far as possible. An **Outline Soils Management Plan** **[APP-226]** (updated at Deadline 3). has been developed and stage specific SMPs will be developed further by the appointed construction contractor based upon additional soil and ALC survey information pre-construction (Commitment C-183). The nature of the onshore elements of the Proposed Development are such that following construction, the majority of the soils and agricultural land within the proposed DCO Order limits will be restored to baseline condition (with the exception of any permanent infrastructure). During the operation and maintenance phase there will be minimal change to the current land use. The undergrounding of the onshore cable route (commitment C-1) allows the original soils to be replaced on top of the buried cables, the topsoil can be returned to its original state and agricultural land returned to its original grade. The **Land Plans** **[PEPD-003]** and **Book of Reference** **[PEPD-014]** identify temporary and permanent land requirements of the Project. Discussions will continue with Affected Persons to minimise impacts on land uses

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			where possible through the consideration of agricultural activities. The Applicant will provide further detailed land use mitigations through compliance with the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) and relevant Outline Management Plans such as the **Outline Soils Management Plan** **[APP-226]** (updated at Deadline 3), and **Outline Construction Method Statement** **[APP-255]**.
			- Land Drainage
			  - Existing land drainage areas and ditches on land holdings will be identified where possible with Interested Parties. The Project will also utilse information provided from Interested Parties prior to commencement as to the location and operation of such systems together with reasonable pre works inspections of land and any existing land drainage plans. The anticipated location of drains that may be interrupted or disturbed by the construction works will be recorded and plans shared.
			  - Appropriate land drainage consultants will be engaged as required to advise on reinstatement and will discuss with the landowners the required scope to ensure reinstatement in accordance with the outline management plans.
			  - In advance of the construction works, any current land drains will, be identified and intercepted in a manner which maintains their efficiency. Work will be carried out to an appropriate specification as set out in the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) (Construction Phase Drainage Plan (CPDP)) after discussion with the Interested Parties, which may include the design (e.g. layout, falls, pipe sizes and types, outfall arrangements) and timing of any land drainage works required.
			  - Land drainage systems, including ditches and culverts, will be maintained and in some cases temporarily diverted during construction and reinstated on completion. Existing land drains, where encountered during construction, will be appropriately marked. Any field drainage intercepted during the works will either be reinstated following the completion of the works or diverted through agreement with the Interested Parties. Where necessary, existing land drains will be replaced to ensure continued agricultural use.
			  - Following completion of the works as-built plans of modifications to existing land drainage and of any new drainage works will be provided to the Interested Parties as appropriate. The land drains will be transferred to the Affected Persons and once returned, such land drainage arrangements will become the sole responsibility of the Interested Parties. Maintenance requirements will generally be consistent with normal farming practice.
			- Land Access
			  - It is accepted that grazing and arable land may have to be removed from use along the cable construction corridor during the construction period. Work will be undertaken to mitigate the impact on arable and grazing land. Where required, livestock could remain at existing levels through the provision of gates and fences that would assist the Interested Parties in moving livestock between grazing areas. Where there is reduced production as a direct consequence of the works and mitigation of financial impacts are identified which leads to financial loss compensation will be considered in line with the "Compensation Code" and the rules set out in Section 5 of the Land Compensation Act 1961 together with supporting legislation **Outline Soils Management Plan** **[APP-226]** (updated at Deadline 3).
			  - Crossing points can be placed in suitable locations in order that livestock, machinery and vehicles can safely cross the working area so as to maintain access routes across individual fields within a farm holding, where reasonably practicable, where the construction corridor is fenced during construction. Water troughs, standpipes or field supplies located within working areas will be moved to a new, temporary or agreed permanent location. Where water supplies are impacted by the works or where fields are fenced off from the water supply, discussions will take place with the Interested Parties to ensure that supplies, can be maintained.

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- Secure temporary fencing will be installed either side of the working area with crossing points for private land access and stock crossing. Discussions will take place with the Affected Persons to ensure that where appropriate the type of fencing selected will suit the location and purpose. All boundary fences will be installed prior to the commencement of works and maintained in a tidy condition and be fit for purpose. Where practicable continued access will be maintained to areas of land that may be temporarily severed or lost as a consequence of the works. Where areas of land are severed compensation will be made where appropriate.
- All construction areas will remain demarcation fenced at all times during construction. All temporary fencing will be removed as soon as reasonably practicable after completion of the works.
- Active discussions and engagement with the Interested Parties would take place to discuss the impact of the scheme prior to, during and after completion of the works. Engagement will continue to ensure that the impact of the Proposed Development on the Interested Parties business is minimised as far as reasonably practicable and where appropriate compensated. The impact of the works will be temporary and minimised by good working relationships and practices.

- Business Viability
  - Following consultation with landowners reasonable accommodation works will be discussed with Interested Parties and where practicable provided for agricultural land holdings, holiday accommodation, equestrian facilities and commercial premises affected by the Scheme. This will ensure that the effects of the construction works are mitigated particularly with respect to access. Through ongoing consultation and discussions with Interested Parties the effects on the operation and future viability of agricultural holdings and businesses will be mitigated.
- Restoration and Reinstatement
  - The requirements for soil reinstatement, monitoring, and aftercare will be implemented in accordance with the **Outline Soils Management Plan** **[APP-226]** (updated at Deadline 3). To protect and limit the impact to soils and agricultural land, soil will be reinstated to its previous condition, as far as reasonably practicable. This will include adequate subsoil preparation and the replacement or replanting of field boundaries and stock fences and the soil will be reinstated and monitored with topsoil prepared and seeded using an appropriate seed mix or returned to arable cultivation. Discussions will take place with Affected Persons to enable appropriate works to be carried out.
  - Stripped topsoil will be stockpiled to the sides of the working width in a manner that provides sufficient separation from subsoil and vehicles in accordance with Sections 5.2 to 5.4 of the Defra Construction Code of Practice (Defra, 2009) and **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3).
- Noise Mitigation
  - A range of measures will be put in place to limit and mitigate noise and vibration effects as set out in the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) to reduce the impact at local receptors during the construction phase of the project. **Chapter 21: Noise and vibration, Volume 2** of the Environmental Statement – Revision B **[PEPD-018]**.
  - These may include modified or restricted working hours, type of equipment to be used, the use of acoustic barriers etc. which will all feed into the best practice used to reduce noise and vibration during construction and this would be subject to ongoing review to inform the mitigation measures required.
  - Restricted Access – Where an access right is affected discussions will be held with Affected Persons to resolve a way forward that may be acceptable to all parties which could include: -
    - A temporary realignment of the access;
    - A temporary stop up of the access between identified timeframes;
    - Unlimited access for emergency vehicles to be maintained.

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			- Where practicable an alternative route of access will be provided. However, this may not be practicable. In order to deliver the benefits of the Proposed Development the Applicant requires the use of compulsory acquisition powers. This will result in a private loss by those persons where interests in land and land are compulsorily acquired. Appropriate compensation is payable to those entitled to claim under the relevant provisions of the Compensation Code for the compulsory acquisition of land or rights and for loss or damage caused as a direct consequence of the works where reasonable, substantiated and shown to be caused as a direct consequence of the temporary use of the land and the works should the exercise of any power be required thereby minimising the private loss. Any dispute in respect of the compensation payable is to be determined through Alternative Dispute Resolution 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 or undertaken. If agreement cannot be reached there is the ability to refer matters to the Lands Chamber of the Upper Tribunal.
LR 1.10	The Applicant	*The Case for Compulsory Acquisition (CA)* For the avoidance of doubt, set out all the factors that are regarded as constituting evidence for a compelling case in the public interest for the CA and Temporary Possession (TP) powers sought and where, giving specific paragraph references, these are set out in the submitted documentation.	The Applicant considers the factors constituting evidence for a compelling case in the public interest for the confirmation of powers of compulsory acquisition and temporary possession are as follows: • The positive benefits generated by the Proposed Development, which will include helping to meet the urgent need for new renewable energy infrastructure in the UK, the delivery of additional renewable energy capacity supporting the achievement of the UK Government's climate change commitments and carbon reduction objectives, and a range of environmental, social and economic benefits including biodiversity net gain (BNG), jobs creation and investment (see paragraph 4.2.1 and 4.2.2 of the **Planning Statement** **[APP-036]**, and paragraphs 7.4-7.7 of the **Statement of Reasons** **[APP-021]**. • Reasonable alternatives to compulsory acquisition have been explored (in accordance with paragraph 8 of the Planning Act 2008 Compulsory Acquisition Guidance) as set out in Section 3.4 of the **Chapter 3 Alternatives, Volume 2** of the ES **[APP-045]**, Section 4.3 'Site Selection and consideration of alternatives' in the **Planning Statement** [**APP-036]** and Section 8 of the **Statement of Reasons** **[APP-021]**. The Applicant provides a detailed and comprehensive assessment of site selection which takes account of reasonable alternatives. The potential effects on the environment are clearly considered whilst the input from consultation on the process is presented. • In the First update of the **Land Rights Tracker** **[REP2-008]** the Applicant has also shown it has, and will continue to, negotiate with relevant landowners to agree options to acquire the land and rights in land necessary for the Proposed Development. • Overall, the Proposed Development is considered to accord with the relevant NPS and revised draft NPS (EN-3). It is considered that the planning balance is firmly in favour of the Proposed Development and the interference with rights associated with the Proposed Development is for a legitimate purpose and is necessary, as required by paragraph 8 of the Compulsory Acquisition Guidance). • All of the land is required for, or is required to facilitate, the development for which development consent is sought (as required by section 122(2) of the Planning Act 2008). The purposes for which the Order Land is required and the primary acquisition powers sought in relation to those land parcels are summarised in paragraphs 9.3 – 9.12 of the **Statement of Reasons** **[APP-021]**, and Appendix 1 to the **Statement of Reasons Appendix 1 List of Land Parcels**.

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- **Acquisitions and Works for which the land is required [APP-022]** provides a plot-by-plot description of the purposes for which the land is required.
- The use of powers is expected to have limited impacts upon existing land use. The type of land to be acquired is mainly agricultural and pasture, without the need for the acquisition of significant freehold land or any residential land. No businesses or residents are expected to be displaced as a result of the proposed acquisition.
- The use of powers is also proportionate because the extent of land to be acquired has been minimised and changes made to the design of the Proposed Development as a result of consultation with landowners (please see further the response to Examining Written Questions **LR 1.13** below and Table 1 of **Appendix B LR: Changes further to Affected Persons representations** (of this document)).
- The land to be acquired is no more than is reasonably required for the purposes of the development (as required by paragraph 11 of the Compulsory Acquisition Guidance).
- In the first update to the **Land Rights Tracker [REP2-008]**] the Applicant has set out the current status of the negotiations undertaken with landowners. These negotiations are ongoing and will be progressed during the Examination period (as required by paragraph 25 of the Compulsory Acquisition Guidance).
- In section 9.11.8-9.11.9 of the **Statement of Reasons [APP-021]**, the Applicant explains that it has a clear idea of how it intends to use the land (or rights/restrictions over land) which will be subject to the powers of compulsory acquisition and temporary possession (as required by paragraph 9 of the Compulsory Acquisition Guidance).
- In the **Funding Statement [APP-025]** an explanation has been provided as to how it is expected that the construction of the Proposed Development and the acquisition of the land or rights over the land will be funded, as well as compensation arising from the exercise of powers of compulsory acquisition (as required by paragraphs 17 and 18 of the Compulsory Acquisition Guidance).
- Subject to the making of the Order, there are no anticipated impediments to the delivery of the Proposed Development (as required by paragraph 19 of the Compulsory Acquisition Guidance). In this regard, the Applicant notes that:

Work on other consents required is ongoing. The Crown Estate Lease is subject to detailed discussions (as explained further in response to LR1.23 below) and the necessary Crown Land section 135 consents are currently being arranged.

Good progress is also being made with regards to the detail of the connection to the National Grid. The Applicant has a grid connection offer, and the updated grid connection offer date for the Proposed Development's connection to the substation at Bolney is 2029. An early stage design for the connection has now been prepared by NGET and is subject to ongoing detailed work. An interface agreement and construction agreement will be put in place with NGET for NGET's and the Applicant's respective works for the Proposed Development on the Bolney Extension land.

A range of additional further consents are also potentially required further to the detailed design of the onshore cable corridor and identification of necessary identified requirements. Ecological consents such as European Species protection licenses will, if required, be sought further to appropriate pre-construction surveys in accordance with the relevant outline management plans and legal requirements. Permits for water discharge may be required from the Environment Agency but this will not be confirmed until detailed onshore cable corridor design, prior to construction.

Ref	Question To:	Question	Applicant's Response
			As a result and given the consideration of for example potential special requirements for protected species licensing the Applicant sees no reason why the other consents in the **Other Consents and Licences** **[APP-033]** will not be secured. Section 2.10 of the **Statement of Reasons** **[APP-021]** sets out how Article 1 of the First Protocol to the ECHR and Articles 6 and 8 of the ECHR have been considered. This, together with other parts of the Application, sets out how the outputs and benefits which will be realised by the Proposed Development will outweigh the private loss that would be suffered by those whose land and/or interests are to be subject to compulsory acquisition (as required by paragraph 13 of the Compulsory Acquisition Guidance). The Applicant considers that confirmation of the powers of Compulsory Acquisition and Temporary Possession in the Draft Development Consent Order are necessary to ensure the Proposed Development can be delivered within a reasonable timescale. Without compulsory acquisition powers, the Order Land could not be assembled, and the Proposed Development would not proceed.
LR 1.11	The Applicant	*BNG* BNG is not currently a requirement for nationally significant infrastructure projects. Accordingly, the ExA considers the compulsory acquisition of land for the sole purpose of meeting BNG may not be justified. Provide a statement that land to be the subject of CA for environmental mitigation is proportionate and necessary for the Proposed Development, and whether BNG is the appropriate tool to calculate the required environmental mitigation.	The Applicant confirms that it is not seeking compulsory acquisition powers in respect of land or rights/restrictive covenants over land for the sole purpose of meeting Biodiversity Net Gain.
LR 1.12	The Applicant	*Professional Fees* Outline your approach to the reimbursement of AP's professional fees.	The initial offer made to all Affected Persons was that the Applicant would reimburse reasonable and properly incurred Agents' fees on exchange of the Option Agreement up to a figure between £1,500 through to £3,250 (depending on the nature of the required interest – whether a lease, or an easement for the cables with or without associated Construction, Operational, or Construction and Operational Access rights) plus any unrecoverable VAT. As negotiations have progressed, where Agents have fully engaged with the Applicant to negotiate terms, the Applicant has requested that the Agents, where appropriate provide fee estimates in the event that they considered the sums set out above to be likely to be insufficient, and as a way forward the Applicant has agreed, in a number of cases, to reimburse professional fees reasonably and properly incurred upon the return of the signed Heads of Terms by the deadline specified. Any such agreement to pay fees at this earlier stage has been subject to a requirement for the Agent to inform the Applicant where fees are within 10% of the agree estimated fee level, at which stage the fees incurred would be subject to review by the Applicant. If the fees incurred were reasonably and properly incurred, then these have been paid and further fee estimates to enable the parties to conclude negotiations and complete the relevant documents have been requested from the Applicant's Agent. The Applicant also confirmed to all Affected Persons through inclusion within the Key Terms that it would still reimburse reasonable and properly incurred fees even in the event that the Applicant were to withdraw from the transaction prior to exchange of the Option Agreement.

Ref	Question To:	Question	Applicant's Response
LR 1.13	The Applicant	*Affected Persons' Suggestions/ Requests* Outline your approach to the investigation of suggestions/ requests made by APs to reduce or mitigate the impact of the Proposed Development on their interests. Explain whether this approach has been consistently followed for all APs.	Feedback from the engagement and consultation activities with Affected Persons outlined in the **Consultation Report** **[APP-027]** and the **Statement of Reasons** Section 10 **[APP-021]** has been integral to the project design evolution process. Where suggestions and requests have been raised by Affected Persons and proposed alternatives, modifications or refinements submitted to the Applicant, these have been assessed by the Applicant through appropriate, comprehensive and consistently applied appraisal methods. **Chapter 3: Alternatives, Volume 2** of the Environmental Statement (ES) **[APP-044]** describes how engagement has led to the consideration of alternatives or a change in the project design. At each stage in the evolution of the Proposed Development design, activities were undertaken to consider alternatives and to refine the onshore design. These included reviews of land ownership, engagement with landowners and consideration of feedback from consultation in addition to analysis of information collected from EIA surveys, identification of technical construction challenges and other engineering considerations. A range of appraisal methods have been used for cable route selection and the assessment of proposed alternatives, modifications and refinements put forward by Affected Persons depending on the Proposed Development stage, risk, type, scale and complexity of the requests. These appraisal methods used to both establish the initial Proposed Development design and determine whether a proposed change should be accommodated within the Project are described in Sections 3.2 to 3.9 of **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**. The main approaches used were constraints mapping and BRAG appraisal, as described in paragraphs 3.1.10 to 3.1.15 of **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**. Constraints Mapping: The constraints mapping approach was used predominantly for initial Project design but was also a tool for looking at proposed alternatives. Constraints data was gathered in a GIS format, and presented on maps as layers. Using professional judgement, these were used as 'hard' or 'soft' constraints. 'Hard' constraints are those that would directly influence the boundaries of sites/indicative cable routes and are generally avoided, unless suitable mitigation is available. Examples of hard constraints both onshore and offshore are internationally protected sites for biodiversity, historic environment designated sites, such as World Heritage Sites, settlements and some land uses such as Ministry of Defence land and quarries. 'Soft' constraints would not generally prevent progress when considered in isolation and can often be moderated through mitigation. The consideration of these constraints included the protection afforded by policy in the 2011 NPSs (DECC 2011a; DECC, 2011b), most recently updated in the 2023 draft NPSs (DESNZ 2023a; DESNZ 2023b). This protection has fed into the development of embedded environmental measures for the Proposed Development Examples include landscape and visual designations such as National Parks and Areas of Outstanding Natural Beauty (AONB), and Public Rights of Way (PRoW) including National Trails, some designated sites for biodiversity such as Ancient Woodland and National Nature Reserves, land uses such as leisure and recreation; and infrastructure constraints such as motorways and railway lines. The constraint layers were combined to create an initial 'heat map' (with no individual weighting) for the early stage Project design and visual aid for use in appraisals. Site visits and workshops were used to review and sense-check the available information, in order to identify options with the overall lowest environmental and other constraints, and identify any particular challenges. A comparative analysis exercise was performed where onshore cable corridor alternatives and modifications were requested by Affected Persons to facilitate a clear and robust approach to the selection of a preferred option. This approach also facilitated incorporation of National Planning Statement (NPS) and National Planning Policy Framework (NPPF) (Ministry of Housing Communities and Local Government (MHCLG), 2021) mitigation requirements described in **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** as well as balancing

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engineering constraints and economic considerations. For the onshore design assessment, where two or more comparable options were being considered, a BRAG (Black, Red, Amber, Green) appraisal approach was used by the multi-disciplinary team including environment, engineering, land interests and cost. Environmental specialists reviewed the different options and defined constraints for each option using the colour coding and rating system shown. **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**. The range of specialists involved in the appraisal varied according to the scale, type, and location of the options. The score for each option was added up, which allowed constraints across a number of topics to be compared numerically.

Plate 1 BRAG appraisal approach

1	Low potential for the development to be constrained (green) e.g., option is not located through sensitive land uses such as diversified agricultural buildings
2	Medium potential for the development to be constrained (amber) e.g., option is located within close proximity to sensitive land uses and buildings
3	High potential for the development to be constrained (red) e.g., Option is located through land used for directly conflicting land use/ direct impact on whole of rural business
4	Very high potential for the development to be constrained (black) e.g., option directly interacts with operational MOD land

Through the use of the BRAG appraisal approach the impacts on Affected Parties' use of the land have been balanced with the environmental and engineering and cost impacts and an overall decision taken on requested proposals and alternatives to it. Where changes were justified, having weighed the various impacts, amendments to the construction corridor or accesses were made. Changes were rejected where, for example, it was established that in comparison to the original there were likely greater impacts on environmental receptors (including for example amenity of nearby residents, effects on trees) and/ or additional engineering and cost impacts.

Where modifications and refinements proposed by Affected Persons were minor, following the check of constraints map information a high-level appraisal was undertaken, focusing only on the relevant environmental and land use aspects. As part of this exercise other parts of the Applicant's Project team including engineering and land representatives undertook appraisals to ensure decision making was informed from a multi-disciplinary perspective.

The design evolution through the statutory and non-statutory consultations is set out in **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044].** Section 3.4 in **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** describes the process of identifying the landfall location and the design evolution of the cable route.

Following Scoping, onshore cable route refinements were considered at nine locations along the onshore cable route, and options were selected at seven of these locations. The onshore cable route presented at the first

Ref	Question To:	Question	Applicant's Response
			Statutory Consultation exercise in July 2021 (subsequently reopened in February 2022) included two locations where options were still being considered (near Warningcamp and the onshore substation location). Following the first Statutory Consultation exercise in July 2021 (reopened in February 2022), three further targeted Statutory Consultation exercises were carried out in October 2022, February 2023, and May 2023 respectively. These considered a series of onshore cable route refinements, which informed the proposed DCO Order Limits. The Applicant notes that a total of six landfall options which were assessed using the requirement criteria. One of the key determining factors was the associated identified onshore cable route generally avoids developments including settlements, isolated houses, and other buildings. Table 3.6 and Table 3.7 presented in **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** set out the cable route options considered and the reason for the choice. Paragraph 3.4.37 of **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]** sets out the alternatives and modifications considered further to the First Statutory consultation stage including the details of the consideration of all Longer Alternative Cable routes, (shorter) Alternative Cable Routes and other proposed modifications such as proposed new Trenchless Crossings. Table 1 of **Appendix B LR: Changes further to Affected Persons representations** (of this document) sets out a list of key changes made further to representations made in response to the Applicant's consultation and engagement exercises, and for which the Applicant applied the appraisal process set out above on a consistent basis. The results of the appraisals were reported back to the Affected Person by a variety of means, including by telephone call, email, presentation at a meeting or by letter, dependent on the communication arrangements with the particular Affected Person at the relevant time.
LR 1.14	The Applicant	*Protected Characteristics* Confirm that all stages of the Proposed Development, including Land Rights negotiations, have complied fully with the Equality Act 2010 including considering AP's protected characteristics.	As explained in **LI94.2** of the Applicant's response to Relevant Representations **[REP1-017]**, the requirement to consider the public sector equality duty ("PSED") rests upon the Secretary of State for Energy Security and Net Zero as the decision-making authority. The Applicant is not a 'public authority' (as defined pursuant to section 150(1) of and Schedule 19 to the Equality Act 2010) and it is not under any duty to consider or comply with the Equality Act 2010. The PSED requires the Secretary of State to consider, when deciding whether to make the Order, whether the Order 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 Order 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 the Order. Notwithstanding that the Applicant is not itself required to comply with the PSED, in preparing the application for the Order, including in its engagement with landowners, the selection of the route, the consideration of alternatives and appropriate mitigation measures, the Applicant has had regard to the PSED. As explained in section 13.2 of the Statement of Reasons, the Applicant has carried out an Equalities Act Impact Assessment (**Appendix 28.3: Equalities Impact Assessment, Volume 4** to Environmental Statement) **[APP-221]**. The assessment concludes that no adverse equality effects are expected as a result of the construction, operation and maintenance, or decommissioning phases of the Proposed Development. 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 2010, or upon persons who do not share such relevant protected characteristic.

Ref	Question To:	Question	Applicant's Response
LR 1.15	The Applicant	*Acquisition of Other Land or Rights* Are any land or rights acquisitions required in addition to those sought through the draft DCO (dDCO) before the Proposed Development could become operational?	With the exception of the land rights required from The Crown Estate which cannot be compulsorily acquired, the Applicant does not require any other land or land rights which are not sought in the draft DCO before the Proposed Development can become operational. As explained below in relation to LR1.23, two agreements for lease have been concluded for the sea bed and array area. An agreement for lease covering the required area of sea bed, intertidal and beach areas is in the process of being negotiated
LR 1.16	Lester Aldridge LLP on behalf of Thomas Ralph Dickson	*Protected Characteristics* The ExA notes Mr Dickson's Relevant Representation (RR) [RR-396] and the Applicant's response with respect to protected characteristics [REP1-017]. Confirm that you have informed the Applicant of the protected characteristic(s) you believe your client has in accordance with the Equality Act 2010 and how it/ they are impacted by the Proposed Development.	Whilst this question is directed at Lester Aldridge LLP, the Applicant would point out that it has not received confirmation of these matters. The Applicant most recently raised equivalent questions by letter dated 21 March 2024 from its Solicitors to Lester Alridge LLP (see **Appendix C LR: Letter to Mr Lester Aldridge - 21.03.24** (of this document). No response has been received to date.
LR 1.17	National Highways	*Permanent Acquisition of Rights* Provide a response to the Applicant's Deadline 2 submission [REP2-026] in respect to the objection raised to the permanent acquisition of rights over plots 7/3, 7/5, 7/6, 7/12 and 7/13.	Whilst the Applicant notes that this question is directed at National Highways, the Applicant is seeking permanent and temporary rights over land owned by National Highways. The Applicant has provided National Highways with details regarding the construction and operational access arrangements but awaits a response from National Highways to enable the parties to progress matters. The Applicant has sent National Highways a set of Heads of Terms for a sliver of land (Plot 7/18) which is owned by National Highways but falls outside of the adopted highway boundary. The Applicant will continue to engage with National Highways to address the concerns raised. The statement of intent for the highway crossing has also been advanced with National Highways.
LR 1.18	National Grid	*Permanent Acquisition of Rights* Provide comments on the Applicant's response [REP2-028] to National Grid's WR [REP1-057]. Update the ExA on the current status of negotiations with the Applicant.	The Applicant notes that this question is for National Grid, however the Applicant sets out below an update with regard to engagement. The Applicant is continuing to progress discussions relating to key terms with NGET for a permanent easement and the method for securing the necessary rights to deliver the works on the extension land at Bolney. NGET is progressing its connection design for these extension works at Bolney. The Applicant is also addressing NGET's concerns raised about the proposed ecological mitigation on land owned by NGET and is seeking to conclude an agreement with National Grid with regard to precisely where the landscaping will be positioned.
LR 1.19	National Trust	*Permanent Acquisition of Rights* Provide comments on the Applicant's response [REP2-028] to National Trust's WR [REP1-166]. What is the current position with respect to negotiations with the Applicant?	Whilst this question is directed at the National Trust, the Applicant notes that it communicated its requirements for the construction access as early as the first statutory consultation in 2021. The Heads of Terms issued to the National Trust in March 2023 confirmed the requirement for the Applicant's temporary use of the construction access land. The Applicant has recently received copies of the tenancy agreements relating to the land at Washington which has helped both parties agree the structure of the suite of land agreements required to secure the necessary rights voluntarily. The requirement for a short lease of this land was incorporated into the Heads of Terms in February 2024. Section 12.3 of the Applicant's Statement of Reasons (SoR) **[APP-021]** provides a detailed explanation of the land rights sought and their impacts. The Applicant has issued Heads of Terms (HOTs) to the National Trust tenant – The Lorica Trust - for a lease of the construction access land (the freehold of which is owned by National Trust) which is being progressed. The Applicant is actively working with, and using all reasonable endeavours to continue negotiations with, the Lorica Trust on the HOTs and associated consideration. Both parties are working towards, and anticipate agreement of, a voluntary option for lease.

Ref	Question To:	Question	Applicant's Response
LR 1.20	Network Rail	*Permanent Acquisition of Rights* Provide comments on the Applicant's response [REP2-028] to Network Rail's WR [REP1-060]. What is the current position with respect to negotiations with the Applicant?	Whilst this question is not directed at the Applicant, the Applicant notes that draft terms have been agreed with Network Rail. The Applicant is also seeking to agree a BAPA and business clearance with Network Rail in parallel with seeking land rights.
LR 1.21	The Applicant	*Progress with Land Rights Negotiations* Provide the following information in relation to obtaining Land Rights for the Proposed Development by agreement (include figures for AP's who have not submitted RRs or WRs): a) Total number of signed agreements required; b) Number of Key Terms issued; c) Number of Key Terms signed; and d) Number of agreements completed	a) Total number of signed agreements required- 108 The number of Affected Parties with whom Carter Jonas were engaging with as part of the consultation process in August 2023, as referred to within the Statement of Reasons, was 172. This figure was extrapolated from a list of Affected Persons with whom engagement was ongoing. It transpires that some of the Affected Persons are no longer relevant to the Proposed Development further to the modifications to the Proposed Development prior to DCO submission. The updated number of agreements required with Affected Persons is 106. b) Number of Key Terms issued- 101 c) Number of Key Terms signed- 6 d) Number of agreements completed- 2 Whilst the ongoing engagement by the Applicant has not yet resulted in significant numbers of Key Terms being agreed, the Applicant has been seeking to encourage Affected Parties to engage fully with negotiations for an Option for easement and respective accesses and compounds. Active discussions associated on the detail of the Key Terms, including specific issues raised associated with individual landholdings, are progressing with approximately 60% of Affected Parties in a positive manner. However, not all Affected Parties have shown a willingness to engage. The Applicant will continue to seek to advance these discussions.
LR 1.22	The Applicant	*A27* In its WR [REP1-058], National Highways state that it is not clear from the Land plans [PEPD-003] whether some of the verges on the northern side of the A27 that are subject to Land Rights are within National Highways land or within the SDNPA. The ExA considers an enlarged section of this land may assist the ExA and National Highways in ascertaining the information needed. Consider and submit at Deadline 3.	The South Downs National Park Authority (SDNPA) does not currently appear on the land plans as there is no requirement to show the SDNPA boundary on the land plans. Nor is the SDNPA a landowner. However, the Applicant has prepared an enlarged plan which includes the SDNPA boundary and the land owned by National Highways and trust that these plans assist in clarifying the position. See **Appendix D LR: SDNP_NH Overlay Plan** (of this document).
LR 1.23	The Applicant	*Crown Land* Confirm that the Proposed Development complies with any constraining conditions in the lease awarded from the Crown Estate.	As set out in the **Statement of Reasons** **[APP-021]** at paragraph 12.1.9, the Applicant has entered into two agreements for lease (AfLs) with The Crown Estate in respect of the Extension and Zone 6 seabed areas which together comprise the array area for the Project. The AfLs grant an option to the Applicant to take a lease of the seabed on certain terms, and if certain conditions are satisfied. As is standard for offshore wind developments, the option to take a lease under the AfLs would not be exercised until the Project has been consented and the Applicant has taken a Final Investment Decision to proceed with the Project. At the point of entering into a lease(s), the Applicant would comply with the conditions set out in the lease. Accordingly, the Applicant has not yet entered into a lease(s) of the seabed but is developing the Project pursuant to the terms of the AfLs and in compliance with the conditions set out in the AfLs

Ref	Question To:	Question	Applicant's Response
LR 1.24	The Applicant	*Michelgrove Park and Sullington Hill* As indicted on the Land plans [PEPD-003] in relation to Plots 11/1, 11/2, 11/3 and 11/4 (Michelgrove Park) and Plots 15/1, 15/2, 19/1 and 19/2 (Sullington Hill), significant areas of new rights are sought. The equivalent Works plans [PEPD-005] show two "arms" for the cable route where the Applicant is yet to decide which cable route to pick, with land between those "arms" not required for any Works. The ExA voiced at ISH1 [EV3-001] that it did not consider this to be justified to meet the tests of Planning Act 2008. Notwithstanding, these areas remain, and powers are sought within the Land plans.	The Applicant has given a response relevant to this issue to the Examining Authority in its Response to Action Point 26 for deadline 1 **(8.25 Applicant's Response to Action Points Arising from Issue Specific Hearing 1 - [REP1-018])** which should be read in conjunction with the response given here, specifically relevant to the trenchless crossings at Michelgrove Park and Sullington Hill. • The cable corridor and the order limits have been selected after careful consideration of a number of alternatives and taking into consideration the relevant technical requirements of construction at each location. • Application of trenchless crossing methods are necessary at these locations to prevent harm to the ancient woodland (Michelgrove) and local wildlife site (Sullington Hill). • Natural England and the South Downs National Park Authority Relevant Representations have voiced concern around the technical viability of these crossings in absence of detailed ground investigation (GI). • The Applicant's Order Limits are wider at these locations to provide this flexibility, which will allow the construction contractor to select the most appropriate route once detailed ground investigation data is available and detailed design has been undertaken. The flexibility would also provide space to re-drill an alignment in the unlikely case of a drill failure. • Within the DCO order limits, the Applicant will undertake the required GI which will need to survey this wider area within the order limits to provide the required level of information and thereby ensure the optimum design is constructed. The order limits are drawn to facilitate this. • The flexibility of the wider order limits at these locations does not mean that all the space within the order limits will be used for cable construction and nor will permanent rights be required over the whole area. However, is important to note that until the survey and detailed design work has been undertaken, any part of the land within order limits in this location could be used for cable construction. The Works Plans [PEPD-005] do not limit Work 9 (onshore connection works) to two 'arms'. Rather, development consent is sought to enable those works to be carried out anywhere within the limits of Work 9 on those plans. The Land Plans [PEPD-003] reflect the same area as the works plans because the Applicant must have the corresponding requisite land rights to construct the onshore connection works anywhere within that area. • The **Crossing Schedule** in Appendix A of the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) shows indicative crossing alignments based on the options for entry pit locations for the trenchless crossings (labelled "Limits of Deviation" on the drawings) which have been used as maximum scenarios for environmental assessment purposes. It is assumed that this is the document which the Examining Authority has in mind when referring to the two 'arms'. However, whilst two 'arms' are shown, it is not the case that there are only two potential alternative options. The Applicant refers to the response given to Action Point 26 for Deadline 1 **(8.25 Applicant's Response to Action Points Arising from Issue Specific Hearing–1 - [REP1-018]**) which further clarified this point. • The final trenchless construction design will be determined during the detailed design stage following ground investigations. The Works Plans and Land Plans are drawn to facilitate this. Final selection of trenchless compound location and definition of trenchless crossing alignment and width will be confirmed through the relevant stage specific construction method statement as secured by requirement 23 in the **Draft DCO** **[REP2-002].** • During the construction, the crossing alignment will be monitored as it is progressed to ensure any unlikely impact on ecology can be mitigated. The construction contractor will require to access the wider area for this purpose and exercise rights outside of the immediate area of trenchless entry or exit pit locations. The wider order limits drawn at these locations will also facilitate this.

Ref	Question To:	Question	Applicant's Response
		a) The ExA is not clear why the area of land between the two "arms" is required for CA for new rights. Justify how land can be included in the BoR for CA without any attached Works. Alternatively, remove these plots from the Land plans.	• As explained above, the area of land between the two 'arms' shown in the supporting information informing the Appendix A Crossing Schedule of the **Outline Code of Construction Practice (CoCP) [PEPD-033]** is required for works as identified on the **Onshore Works Plans [PEPD-005]** and the land rights sought are therefore necessary for the proposed development in accordance with the compulsory acquisition tests in section 122(2)(a) of the PA 2008. To remove any of the land over which rights are sought from the Order at this stage risks the Applicant being in a position whereby it has development consent to undertake works to an area of land but does not have the necessary land rights to do so. This could materially prejudice the Applicant's ability to deliver the proposed development. • The Applicant will seek to mitigate the extent of land required to construct the proposed development and in this respect it is required to confirm the cable corridor and width as part of the Construction Method Statement for the stage comprising these works, pursuant to requirement 23 of the draft DCO. This will be subject to approval by the relevant local planning authority. • Having identified the construction corridor, Article 22 of the Order permits the Applicant to acquire *so much of the Order Land* as is required for the authorised project, or to facilitate, or is incidental to it. Therefore it is clear that the Order may authorise compulsory acquisition powers over a wider area than may ultimately be used, reflecting the parameters-led approach to the works for which development consent are sought. • The Applicant may then only lawfully exercise the powers pursuant to Article 22 of the Order over so much of the land as is required at the time that those powers are implemented. • Furthermore, as the Applicant has explained in the **Statement of Reasons [APP-021]**, it intends to further minimise the extent of land over which it will exercise permanent compulsory acquisition by taking temporary possession of the land first for construction purposes wherever reasonably practicable. Permanent powers would then be exercised over a narrower land corridor when the final layout of the infrastructure is known.
		b) Explain, once the cable routes at these locations have been selected, how the powers over the other "arms" will be removed from the BoR and how this is secured in the draft DCO [REP2-002].	For the reasons given above, it is not the case that the Applicant can select one 'arm' over the other at a particular point in time. There are multiple potential 'arms' and combinations of 'arms'. Nor is it possible for the Applicant to amend the **Onshore Works Plans [PEPD-005]** or remove land from the draft Order. The Applicant's response to LR1.24(b) above explains how the draft Order operates to permit the Applicant to only lawfully exercise compulsory acquisition powers over the land it requires for the authorised project, or to facilitate it or is incidental to it.

Table 2-6 Air Quality

Ref	Question To:	Question	Applicant's Response
AQ 1.1	The Applicant	*Outline Air Quality Management Plan* The ExA notes that a Dust Management Plan (DMP) would be submitted to the relevant planning authority for approval, at relevant stages of the Proposed Development, secured as part of the detailed CoCP under Requirement 22 of the draft DCO [REP2-002]. Consider: a) Whether, as it will address both the management of dust generated by the construction of the Proposed Development and wider air quality management measures, the document should not be called an 'Air Quality Management Plan' (AQMP); and	a) The Applicant acknowledges the comment and has updated the naming convention from 'Dust Management Plan' to 'Air Quality Management Plan (AQMP)'. The **Outline Code of Construction Practice** **[PEPD-033]** has been updated at Deadline 3 to include this change.
		b) Providing an Outline DMP or Outline AQMP at D3 which would have the advantage by reference to the assessments reported in the ES of setting out all the key air quality and dust management measures in a single document.	b) The Applicant confirms an **Outline Air Quality Management Plan** (**Document reference: 8.62**) has been provided at Deadline 3 as an Appendix to the **Outline Code of Construction Practice** **[PEPD-033]** updated at Deadline 3 submission. The Outline Air Quality Management Plan includes reference to the assessments reported in **Chapter 19: Air quality, Volume 2** of the Environmental Statement (ES) **[APP-060]** and **Chapter 32: ES Addendum, Volume 2** of the ES **[REP1-006]** and includes all dust and air quality management measures.
AQ 1.2	The Applicant	*Air Quality Management Areas* While it is noted that the OCTMP [REP1-010] contains a commitment that HGV routing for the Proposed Development will avoid major settlements where possible including Storrington (C-1570), explain why there isn't a specific commitment to avoid its Air Quality Management Area (AQMA) as provided for Cowfold's AQMA (C-158).	The Applicant has two commitments relating to construction traffic routeing. The general commitment C-157 is achieved through the routeing restrictions contained within the **Outline Construction Traffic Management Plan** **[REP1-010]** (updated at Deadline 3). However, it is necessary to use A roads through Cowfold (including the Cowfold Air Quality Management Area (AQMA)) for heavy goods vehicle (HGV) traffic to access part of the onshore cable corridor, so a specific commitment has been made (C-158) to manage this. As it will not be necessary to route HGVs through Storrington (or the Storrington AQMA), no specific management commitment is required here. The Applicant notes that there are no proposed HGV routes through Storrington, as shown in Figure 7.6.6 of the **Outline Construction Traffic Management Plan** **[REP1-010]** (updated at Deadline 3). Table 19-9 within **Chapter 19: Air quality, Volume 2** of the Environmental Statement (ES) **[APP-060]** assesses that even with worst case limited construction traffic travelling through the Storrington High Street AQMA, given that Annual Average Daily Traffic (AADT) along the Storrington High Street AQMA is below the Institute of Air Quality Management (IAQM and EPUK, 2017) screening criteria for road links in AQMAs, potential effects are negligible. Therefore, it is not considered necessary to specify Storrington AQMA in commitment C-158 (**Commitments Register** **[REP1-015]**). However, construction traffic routeing secured through the **Construction Traffic Management Plan** **[REP1-010]** (updated at Deadline 3 and secured via Requirement 24 of the **Draft Development Consent Order** **[REP2-002]**) ensures that construction traffic will avoid settlements including Storrington wherever possible in line with commitment C-157 (**Commitments Register** **[REP1-015]**). In relation to Cowfold, whilst commitments C-157 and C-158 (**Commitments Register** **[REP-1-015]**) discourage traffic from routeing through the Cowfold AQMA, it is a necessary part of the construction traffic route for the northern part of the o**nshore** cable corridor. For robustness within **Chapter 23:**

Ref	Question To:	Question	Applicant's Response
			Transport, Volume 2 of the ES **[APP-064]** and Chapter 32: ES Addendum, Volume 2 of the ES **[REP1-006]**, 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 effects within Cowfold. These commitments are also reflected in Table 5-1 of the Outline Construction Traffic Management Plan **[REP1-010]** which has been updated at the Deadline 3 submission and is secured via Requirement 24 of the Draft Development Consent Order **[REP2-002]**. The Outline Construction Traffic Management Plan **[REP1-010]** confirms the prescribed local HGV access routes for all sections of the onshore cable corridor and Table 5-2 details specific local constraints and proposed management of construction traffic routes.
AQ 1.3	Horsham DC	*Air Quality* Confirm responses provided by the Applicant at Deadline 2[REP2-022] to issues raised on air quality in the LIR [REP1-044], particularly regarding using technology to monitor the impact of the Proposed Development on AQMAs.	The Applicant recognises that this question is directed at Horsham District Council but notes that the Applicant has provided an Air Quality Mitigation Strategy (**Document reference: 8.62**) at Deadline 3 in line with the Air Quality and Emissions Mitigation Guidance for Sussex (Mid Sussex District Council, 2021). The Applicant shared the Air Quality Mitigation Strategy with Horsham District Council in advance of the submission at Deadline 3 for comment. The Air Quality Mitigation Strategy (**Document Reference: 8.62**) includes a calculated financial contribution (damage cost), in line with the measures outlined in the Air Quality and Emissions Mitigation Guidance for Sussex (Mid Sussex District Council, 2021), that could be applied to a series of mitigation measures to offset air emissions. One such measure, as described in the Horsham District Council Air Quality Status Report, is the continuation and expansion of the use of technology to monitor nitrogen dioxide and particulate matter in the Cowfold and Storrington Air Quality Management Areas.
		List any outstanding issues with recommendations on how they should be addressed.	The Applicant considers that with the implementation of the Air Quality Mitigation Strategy (**Document reference: 8.62**) no further air quality issues will be outstanding.

Table 2-7 Biodiversity

Ref	Question To:	Question	Applicant's Response
BD 1.1	The Applicant Natural England SNDPA West Sussex CC Horsham DC Arun DC Mid Sussex DC	*Biodiversity calculations* **For The Applicant** a) Volume 4, Appendix 22.15 of the ES [APP-193] states metric 4.0 version of the biodiversity metric has been used to calculate the biodiversity baseline and present planned BNG outcomes. Confirm that this was the latest version at the time of submission.	The Applicant can confirm that the Biodiversity Metric 4.0 was the most up to date version of the metric at the time of the Development Consent Order (DCO) Application in August 2023. The Statutory Biodiversity Metric was not published until 29 November 2023. The Applicant has updated commitment C-104 (**Commitments Register** **[REP1-015]** updated at Deadline 3) to acknowledge explicitly that the Statutory Biodiversity Metric (i.e. the latest version) will be used during the detailed design phase to quantify losses and gains. Commitment C-104 now states "*RED will deliver a Biodiversity Net Gain (BNG) of at least 10% for the onshore elements of the project, measured using the Statutory Biodiversity Metric. BNG will be delivered in line with the Biodiversity Gain Information provided.*'
		b) The ExA requests the BNG metric spreadsheet used for the calculations is submitted into the Examination.	The biodiversity net gain (BNG) metric spreadsheet has been submitted in an updated version of **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the Environmental Statement **[APP-193]** at Deadline 3. The update has included updating to use the Statutory Biodiversity Metric.
		For Natural England, SDNPA, West Sussex CC c) It is noted that the latest metric is now the Statutory Biodiversity Metric. Explain whether the calculations need to be updated using the latest version. d) Is there agreement on the biodiversity baseline presented in Appendix 22.15 Biodiversity Net Gain information [APP-193] for the: i. Total number of baseline units calculated for the worst-case realistic scenario. ii. Total number of units lost to the Proposed Development. e) Confirm whether clarity exists on how the calculations have been done and is there agreement on the methodology and the spatial areas for which the calculations have been presented?	
BD 1.2	Natural England SNDPA West Sussex CC Horsham DC Arun DC Mid Sussex DC	Confirm that the Applicant has adequately followed the mitigation hierarchy in respect to no biodiversity net loss and biodiversity net gain.	The Applicant recognises that this question is directed at Natural England and local authorities but notes the following: • The mitigation hierarchy has been followed during the design process for the Proposed Development; • Avoidance of sensitive ecological features has been incorporated into the design of the Proposed Development wherever possible; • Where avoidance has not been possible, measures to minimise effects (such as trenchless crossings have been adopted); • Mitigation has been provided where necessary and the Applicant is continuing to consider further measures based on further feedback from stakeholders. For example, the updated **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) includes a new commitment C-291 that reduces potential effects on fragmentation when crossing hedgerows, tree lines and belts of scrub "*Where hedgerow, tree lines or belts of scrub are temporarily lost to facilitate the installation of cable ducts, suitable material (such as straw*

Ref	Question To:	Question	Applicant's Response
			bales, dead hedging, willow hurdles etc.) will be placed in the gaps to facilitate bat movement along linear corridors following backfill of cable trenches and until such time as reinstatement begins."; • Compensation is provided through habitat creation and reinstatement within the draft Order Limits and via the provision of biodiversity units to reach a position of 'no net loss' through the biodiversity net gain (BNG) process (see **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the Environmental Statement **[APP-193]** (updated at Deadline 3); and • A commitment to delivering at least 10% BNG has been made by the Applicant and secured through Requirement 14 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3). Therefore, enhancement in addition to compensation to reach a position of 'no net loss' through the biodiversity net gain will be achieved. An additional commitment C-292 has been added to the **Commitments Register [REP1-015]** (updated at Deadline 3) that reads "*During detailed design the mitigation hierarchy will be applied to avoid losses of key habitats (e.g. woodland, hedgerows, scrub, watercourses and semi-improved grassland) where possible, and where not to minimise losses and mitigate for them. At each crossing of sensitive habitats the Ecological Clerk of Works will provide advice to the design engineers with justification of approach provided. The approach at individual crossings will be detailed in the relevant stage specific Code of Construction Practice."* Commitment C-292 secures the application of the mitigation hierarchy through the decision-making process at detailed design. Further detail is provided in the Applicant's response to Natural England's Relevant Representation specifically reference J52 in **Deadline 1 Submission – 8.24 Applicants Responses to Relevant Representations [REP1-017]**.
BD 1.3	The Applicant	a) Clearly present any further details of planned on-site, off-site, or partially off-site delivery of BNG to that documented in section 5 of APP-193 since the application was submitted in August 2023.	The Applicant is in discussions with landowners who have expressed interest in delivering biodiversity net gain (BNG), including two landowners who have pledged land to the strategic Weald to Waves Project. The Applicant has also met with the local authorities (West Sussex County Council, South Downs National Park Authority, Horsham District Council) and the Environment Agency on the 18 March 2024 to discuss approach to BNG. In these discussions, other strategic schemes were discussed including Wilder Horsham and the Weald to Waves Project. The Applicant is not currently proposing to secure options for the delivery of biodiversity units prior to consent but is actively engaged in understanding the options currently available. The approach that the Applicant has taken towards BNG is in line with the recently consented Yorkshire Green project. In the final version of National Grid's Statement of Common Ground with Natural England (EN020024-000937-Document 8.5.5(B) Statement of Common Ground Between National Grid Electricity Transmission and Natural England Final Version 2 (Clean).pdf (planninginspectorate.gov.uk)) agreement is reached (SOCG I.D 3.7.1) on the approach set out. This describes the identification of biodiversity units to make up the deficit post-consent, based on a set of criteria that are used to identify the most appropriate units available. Therefore, the Applicant is content that the approach described within **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** (updated at Deadline 3) is satisfactory.

Ref	Question To:	Question	Applicant's Response
		b) Explain how off-site delivery of BNG by a third party, would achieve the intended nature conservation benefits in the expected timeframe and what risks are associated with this approach.	The Applicant will seek to secure off-site delivery of biodiversity net gain (BNG) through a third party (see **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the Environmental Statement (ES) **[APP-193]** (updated at Deadline 3)). The Applicant will engage in the activity of identifying available biodiversity units during the detailed design phase of the Proposed Development. These units would be provided either by an engaged landowner or a third party (such as a habitat bank or a strategic scheme). Where engagement is directly with a landowner, a third party (such as a habitat bank or land agent) would be used to secure and register the units with Natural England and ensure that the appropriate management and monitoring then takes place over the course of the 30-year term. Through the engagement of a specialist third party, the Applicant (Rampion Extension Development Limited) and latterly the Offshore Transmission Owner (OFTO) would not need to be engaged directly in the monitoring and management of BNG. This ensures that appropriate specialists are in place to manage the delivery of BNG. Once registered with Natural England the creation of biodiversity units (if they have not been created already) must begin within 12 months of the registration as a condition of registration. However, the Applicant will select units that have been created or can be created in the short term during the process; this information would be provided in the biodiversity net gain information that would need to have approval from the relevant planning authority via Requirement 14 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). The risks to the approach outlined in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** (updated at Deadline 3) are those inherent in the mandatory BNG system. This is that there will not be sufficient biodiversity units available to purchase. However, through engagement with local authorities, landowners, habitat banks, strategic projects and land agents, the Applicant considers this risk to be negligible. However, should this be realised statutory biodiversity credits would provide a fallback position as they do for the mandatory BNG system.
		c) Explain how off-site BNG would be secured.	Off-site biodiversity net gain (BNG) would be secured through a Section 106 agreement (between the landowner and the relevant local planning authority) or a conservation covenant (between the landowner and a responsible body) as per the mandatory BNG system described by the Department for Environment, Food and Rural Affairs (Defra) (2023).
		d) In the Applicant's response to SDNPA's LIR at Deadline 2 [REP2-024] the Applicant states: "*The reinstatement has been considered within the assessment as the realistic worst case which is the replacement of habitat like for like (i.e. the opportunity for enhancement is not considered). This is because agreements with individual landowners can only be made when a detailed design is understood and a delivery schedule known. Regardless of the reinstatement, it is likely that there will remain a shortfall of units to reach 'no net loss' (i.e. compensation) and subsequently BNG. This shortfall will be delivered through BNG as secured via Requirement 14 of the Draft Development Consent Order [PEPD-009].*"	The shortfall in biodiversity units (based on a realistic worst-case scenario) is provided in Table 4-5 of **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the Environmental Statement **[APP-193]** (updated at Deadline 3). This shows a shortfall of 51.35 habitat units, 6.19 hedgerow units and 2.67 watercourse units (measured from a position of no net loss). Table 4-5 also shows the number of units required to deliver 10% biodiversity net gain (BNG) of 95.66 habitat units, 9.83 hedgerow units and 3.12 watercourse units. The location of the shortfall is spread throughout all of the proposed construction works based on the assumed reinstatement to current condition. This means that there is a shortfall associated with all reinstatement as the 'risk multipliers' within the metric ensure that no net loss cannot be reached by reinstatement alone across the whole Proposed Development area.

Ref	Question To:	Question	Applicant's Response
		The ExA would like to better understand the shortfall described above. In the worst-case scenario, how large would the shortfall be and where would it occur.	
BD 1.4	The Applicant	a) Confirm whether any compulsory acquired land would be used to deliver BNG no net loss i.e. compensation. b) Confirm whether all land used for BNG enhancement would be either through voluntary landowner agreements or through the BNG market.	The Applicant confirms that it is not seeking compulsory acquisition powers in respect of land or rights/restrictive covenants over land for the sole purpose of meeting biodiversity net gain. Biodiversity units to deliver both 'no net loss' and a net gain of at least 10% would be secured through purchasing them from interested affected landowners, strategic projects or habitat banks. Even where affected landowners are to provide biodiversity units this would be administered in a similar way as a habitat bank to ensure that ongoing management and monitoring is as straightforward as possible over the required 30 year period. The Applicant will agree the principal and level of provision with an affected landowner alongside a land agent/habitat bank/ third party broker. The voluntary agreement would be made between the landowner and land agent/habitat bank/third party broker and the Applicant would in affect purchase the units through the third party. This is to ensure that the Offshore Transmission Owner would not need to directly take on the administration of management and monitoring. This is considered by the Applicant to be the best way to ensure agreed management and monitoring is delivered in the long term.
BD 1.5	Horsham DC Arun DC West Sussex CC Environment Agency SDNPA	a) Confirm that the proposal for BNG aligns with and complements relevant national or local plans, policies and strategies including the Local Nature Recovery Strategy or other relevant local plans, policies or strategies. b) Confirm that the mitigation hierarchy has been adequately followed to avoid then mitigate then compensate, in that order, in respect to biodiversity.	
BD 1.6	Natural England SDNPA West Sussex CC Horsham DC Arun DC	Concern has been raised by SNDPA [REP1-049], Sussex Wildlife Trust [RR-381], Horsham DC [REP1-044] and Natural England [RR-265] regarding the transparency between delivery of compensation for the Proposed Development i.e. no net loss of biodiversity and biodiversity enhancement of 10% i.e. 10% biodiversity net gain (BNG). The Applicant states it has used the Natural England BNG metric tool to calculate the units required for both [APP-193]. a) Explain whether Table 4-5 on page 24 of Volume 4, Appendix 22.15 of the ES APP-193, provides a sufficiently clear and transparent explanation of how many units of each type are required and is there agreement on the number of units to achieve no net loss and 10% net gain. b) Comment on whether no double-counting is clear between activities planned to deliver mitigation, compensation, enhancement and net gain. c) Is further explanation required? If so, please specify what is needed.	The Applicant recognises that this question is directed at the Natural England and local authorities but notes the following: • All elements included within the biodiversity net gain (BNG) calculations are in line with the Department for Environment, Food and Rural Affairs (Defra) guidance '*What you can count towards a development's biodiversity net gain*' (May 2023, updated March 2024) (accessible online at: What you can count towards a development's biodiversity net gain - GOV.UK (www.gov.uk); and Discussion on this point was held with the local authorities (West Sussex County Council, South Downs National Park Authority, Horsham District Council and the Environment Agency) on 18 March 2024.

Ref	Question To:	Question	Applicant's Response
BD 1.7	The Applicant	Due to the concerns raised by SNDPA [REP1-049], Sussex Wildlife Trust [RR-381], Horsham DC [REP1-044] and Natural England [RR-265] regarding the transparency between delivery of compensation for the Proposed Development, the ExA wishes to better understand in respect to environmental mitigation, what comprises mitigation, compensation, enhancement and BNG. The ExA requests the Applicant provides plans showing mitigation and BNG measures that clearly distinguish between mitigation, compensation, enhancement and net gain.	The term biodiversity net gain for the mandatory system (as published by the Department for Environment, Food and Rural Affairs (Defra), 2023) is slightly misleading as the Statutory Biodiversity Metric accounts for more than just the net gain element. The metric calculates the predicted losses, and values elements including those delivering compensation and enhancement. As described in the Applicant's response to **reference BD 1.3** (above), **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the Environmental Statement (ES) **[APP-193]** (updated at Deadline 3) outlines the number of biodiversity units to reach a position of no net loss is provided (i.e. compensation) as are those to reach a biodiversity net gain (BNG) of at least 10% (i.e. enhancement). Mitigation is included within BNG calculations when it is suitable to do so. For example, some advance planting at the onshore substation at Oakendene location is to mitigate and compensate the effects of disturbance and fragmentation on hazel dormouse (noting that this is also compensation for woodland and scrub loss). However, other types of mitigation (for example measures to avoid damaging or destroying active birds' nests) are not included in the calculations as they do not comprise habitat reinstatement, creation or enhancement. Rather these are described in the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3). Through the commitments and associated descriptions described within the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3), the Applicant is of the view that suitable mitigation is being provided to avoid significant effects on ecological features, whilst acknowledging that fully compensating for the permanent and temporary loss of habitats are not fully detailed as this will be met through the delivery of the approach to BNG as described in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** (updated at Deadline 3). Based on the above the Applicant does not consider it is possible to provide a plan that distinguishes between mitigation, compensation, enhancement and BNG. For example, the enhancement of an area of woodland could also be mitigation or compensation for a legally protected species, whilst counting towards BNG.
BD 1.8	Natural England SDNPA West Sussex CC	The Applicant states in section 5.2.1 of Volume 4, Appendix 22.15 of the ES APP-193 that: "*To avoid a deficit in biodiversity growing as the construction programme progresses, the Proposed Development will follow two courses of action. The first is to enable a progressive reinstatement of habitats, whilst the second is to secure 70%[7] of the deficit (as calculated in Table 4-5 – i.e., as a realistic worst-case scenario) prior to commencement of construction. Any remaining shortfall identified following detailed design will be secured prior to construction works being completed.*" *[7] It is expected that 70% of the deficit as calculated at Table 4-5, will likely be equivalent to that which will be necessary to provide to secure the commitment once detailed design has been completed*."	The Applicant recognises that this question is directed at the Natural England and local authorities but notes the following: A figure of 70% of the deficit has been chosen as it allows scope for areas within the proposed construction area to be enhanced for biodiversity net gain (BNG) should successful discussions with landowners be concluded. Should 100% of the BNG commitment be secured (i.e. registered with Natural England) prior to construction then sites subject to construction could not be included as it would not be possible to register these with Natural England until such time as habitat creation or enhancement measures were deliverable.

Ref	Question To:	Question	Applicant's Response
		Confirm whether there is general agreement on this approach, particularly the delivery of 70% of the deficit prior to commencement of construction. Provide details of any outstanding concerns.	
BD 1.9	The Applicant	a) Provide calculations for the losses of biodiversity for the Proposed Development within: • The Arun DC area; • The Horsham DC area; and The SDNPA area.	**Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the Environmental Statement (ES) **[APP-193]** (updated at Deadline 3) has been updated using the Statutory Biodiversity Metric and broken down by local authority area. Separate results are also provided for the South Downs National Park. Accompanying the updated Appendix are the Statutory Biodiversity Metric workbooks for Arun District Council area, Horsham District Council area and Mid-Sussex District Council area. A separate workbook is also provided for the South Downs National Park but it should be noted that this includes some of the losses and gains within both Arun District and Horsham District and therefore care must be taken to avoid double counting. It should also be taken into consideration that all of the workbooks show error messages. This is simply based on two factors: • Biodiversity net gain (BNG) of at least 10% is not demonstrated in the workbooks, as per the approach taken in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** (updated at Deadline 3); and • Trading rules are not being satisfied. This is an inevitable consequence of BNG of at least 10% not being demonstrated. At the detailed design stage workbooks will include the biodiversity units identified and secured that will ensure that BNG of at least 10% is delivered and trading rules are met.
		b) Explain whether the Applicant is planning to compensate for net biodiversity loss experienced within each area with compensation also located within each area.	Requirement 14 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3) requires stage specific biodiversity net gain (BNG) strategies that require approval from the relevant planning authority in consultation with Natural England. The Applicant would therefore expect to deliver BNG within the area from which it is lost in order to reach agreement. However, it is recognised that should there be either a particular need to meet trading rules surrounding the Statutory Biodiversity Metric or the local market cannot provide enough units then alternatives would need to be considered. On the basis of current information, it is expected that suitable biodiversity units will be available in each local planning authority's boundary. This is in line with **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the Environmental Statement **[APP-193]** (updated at Deadline 3).
		c) In respect to the Oakendene site, explain whether the Applicant is planning to use the site to compensate for biodiversity loss within each of the areas. If not, where else is the Applicant planning to compensate for biodiversity loss.	The habitat created within the onshore substation site at Oakendene will provide some of the compensation associated with losses in Horsham District (outside of the South Downs National Park) and has potential to be accounted for as biodiversity net gain (BNG) subject to landowner agreement. However, other habitat will need to be created as the indicative landscape plan shown in the **Outline Landscape and Ecology Management Plan** **[APP-232]** (updated at Deadline 3) does not include all habitats that will need to be provided to meet the trading rules that underpin the Statutory Biodiversity Metric, such as hedgerows. As noted in the response in **reference BD 1.7** (above), compensation will also be delivered through the delivery of the Biodiversity Net Gain strategy described in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the Environmental Statement **[APP-193]** (updated at Deadline 3).

Table 2-8 Climate Change

Ref	Question To:	Question	Applicant's Response
CC 1.1	The Applicant	*Climate Resilience - Drainage Proposals for the Proposed Substation Site at Oakendene* Explain how the drainage proposals at the proposed substation site at Oakendene meet expectations on climate resilience in National Policy Statement (NPS) EN-1 and EN-3, both 2011 and 2024 versions.	The requirements of the National Policy Statement (NPS) EN-1 and EN-3 with respect to climate change and flood risk are set out in Table 2-1 and Table 2-2 of **Appendix 26.2: Flood Risk Assessment (FRA), Volume 4** of the Environmental Statement (ES) **[APP-216]**. As stated in Paragraph 2.2.5 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**, the FRA was prepared in accordance with both the 2011 NPS and draft 2023 NPS guidance (relevant at the time of the Development Consent Order (DCO) Application). As set out in Paragraph 2.2.8 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**, the FRA requirements from the revised draft NPS EN-1 (2023) were considered rather than those in the extant NPS EN-1 (Department of Energy and Climate Change (DECC) 2011a) given that these are more stringent and requirements from the extant NPS EN-1 remain. A written statement on the implications that the National Policy Statements (NPSs) for Energy, now designated by Parliament, may have for the Proposed Development was provided by the application in **Statement on the Implications of the 2023 National Policy Statements [REP1-031]**. This Statement comprised a comparison of significant changes between the draft NPSs of March 2023, and referred to in the DCO Application, against the NPS as subsequently designated by Parliament in January 2024. In summary, the requirements within NPS EN-1 2024 with respect to climate resilience relevant to the proposed substation site at Oakendene are essentially unchanged from the 2023 draft. Table 2-2 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** includes multiple items under the heading of 'climate change', quoted from Section 4.9 (Climate Change Adaption and Resilience) of the draft 2023 NPS EN-1 (paragraphs 4.9.11 to 4.9.19), which are now included in Section 4.10 of the 2024 version (4.10.11 to 4.10.19). Table 2-2 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** also identifies the section in the FRA where each matter is addressed. Climate change has been incorporated into the assessment of all relevant flood risk, as detailed in Section 5.7 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216],** based on reference to the latest Environment Agency climate change allowances for flood risk assessments in accordance with the requirements of the NPS (paragraphs 4.10.3 and 4.10.9 of the 2024 version of NPS EN-1). Specific considerations with respect to the NPS regarding application of a 'credible maximum scenario' (paragraph 4.9.15 of the draft 2023 version of NPS EN-1 and paragraph 4.10.15 of the 2024 version) is detailed in Paragraphs 5.7.4 to 5.7.9 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**. Reference to further sections of the FRA in which those paragraphs of the NPS EN-1 are addressed are provided in Table 2-2 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** (5.7, 6.2, 6.5 7.3 and 8.4 of the FRA). Relevant climate change allowances to surface water flood risk are detailed in Paragraphs 5.7.25 to 5.7.27 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**. In addition, Section 2.3 of the **Outline Operational Drainage Plan [APP-223]** (updated at Deadline 3) details the assessment of climate change specific to the management of surface water runoff from the onshore substation site at Oakendene. With respect to management of surface water flood risk at the proposed onshore substation site at Oakendene and taking into account the impacts of climate change across the lifetime of the proposed development, the Indicative Sustainable Drainage Systems (SuDS) Plan shown in Appendix A of the **Outline Operational Drainage Plan [APP-223]** (updated at Deadline 3) outlines the proposed SuDS features and strategy for managing and conveying surface water across the onshore substation site. As stated in Paragraph 6.5.5 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of ES **[APP-216]**, the onshore

Ref	Question To:	Question	Applicant's Response
			substation will adhere to the National Grid target guidance for flood protection (National Grid 2016), providing flood resilience to a level equivalent of the 0.1 percent annual exceedance probability (AEP) plus climate change event in addition to a 300mm freeboard allowance. This design standard is anticipated to exceed that considering the one percent AEP event and credible maximum climate change (upper end) scenario relevant to the Proposed Development as dictated by the NPS (Department for Energy and Net Zero (DESNZ), 2024a). This will ensure continued operation during an extreme flood and in accordance with the NPS (DESNZ, 2024a) requirements for climate change resilience. As stated in paragraphs 2.3.1 to 2.3.3 of the **Outline Operational Drainage Plan** **[APP-223]** (updated at Deadline 3), a precautionary approach was taken in the initial attenuation storage assessment, considering the 'Upper End' climate change allowance (45 percent) for peak rainfall intensity (rather than the 25 percent which the National Planning Policy Framework Planning Practice Guidance (PPG) (Ministry of Housing Communities and Local Government (MHCLG), 2022) states is required for developments with a lifetime between 2061 and 2100. As stated in paragraphs 2.3.1 to 2.3.3 of the **Outline Operational Drainage Plan** **[APP-223]** (updated at Deadline 3), this assumption (for the initial attenuation storage assessment) was *"precautionary in that for the final design the 45 percent allowance need only be considered with respect to flood risk to safety critical elements, rather than consideration of flood risk to off-site third parties. In addition, the Environment Agency guidance (2022a) does not explicitly state how the maximum credible scenario should be considered with respect to peak rainfall intensity. However, this approach has been taken at this outline stage to demonstrate that the outline design presented will be capable of addressing a more-extreme event than explicitly required by current guidance."* On the basis of the response above, the Applicant believes that the outline drainage proposals at the onshore substation site at Oakendene meet expectations on climate resilience set out in NPS EN-1 and EN-3, both 2011 and 2024 versions. The final drainage proposals for surface (and foul) water drainage are secured via Requirement 17 in the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3).
CC 1.2	The Applicant The Environment Agency Clymping Parish Council Arun DC	*Climate Resilience - Depth of HDD at Climping Beach* Is there agreement that Commitment C-278, which states a minimum depth of 5m is maintained when passing beneath Climping Beach SSSI, provides sufficient depth of HDD to be climate resilient to coastal erosion.	It is in the interest of the Applicant that the horizontal directional drilling (HDD) cable conduit under Climping Beach remains buried throughout the operational lifetime of the Proposed Development. The final design, location and depth of burial of the cable and other landfall infrastructure will be informed by further studies (commitment C-247, secured via Requirement 26 in the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3)) including studies of coastal erosion, building on work that has been completed in the past and also incorporating recent experience (such as in relation to storms). The Applicant is unable to confirm an exact depth of HDD as this will be informed by the geological and geotechnical investigations. The minimum depth of 5m is indicative (see paragraph 5.6.12 in the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) and may be increased if found to be insufficient to be climate resilient to the predictable envelope of future coastal erosion.
CC 1.3	The Environment Agency The Applicant	*Greenhouse Gas Emissions - Sulphur Hexafluoride (SF6)* Comment on the Applicant's statement in Appendix 29.1 Supporting data for the Green House Green assessment [APP-222] section 1.5.1 that SF6 gas (a greenhouse gas) has: *"…not been included in the assessment as these have been assumed to compose < 1% of the material weight. Institute of Environmental Assessment and*	**Chapter 29: Climate change, Volume 2** of the Environmental Statement (ES) **[APP-070]** and the supporting **Appendix 29.1: Supporting data for the GHG assessment, Volume 4** of the ES **[APP-222]** has been prepared in alignment with best practice as set out in the relevant Institute of Environmental Management and Assessment (IEMA) Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance – 2nd Edition (IEMA, 2022). Some materials (such as oil and Sulphur Hexafluoride (SF_6)) were not included in the assessment as they have been assumed to compose of <1% of the material weight and so associated activities would not significantly change the result of the assessment. This approach follows the IEMA, 2022 best practice guidelines and the statement remains valid as stated.

Ref	Question To:	Question	Applicant's Response
		Management (IEMA) Guidance (IEMA, 2022) states that activities can be excluded where they do not significantly change the result of the quantification."	
CC 1.4	The Applicant	*Greenhouse Gas Emissions - Sulphur Hexafluoride (SF6)* Explain why quantities of SF6 gas have been provided for the gas insulated components of the Oakendene substation in Table 1-2 of Appendix 29.1 Supporting data for the Green House Green assessment [APP-222] but not for the Bolney substation extension.	In line with Institute of Environmental Management and Assessment (IEMA) Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance – 2nd Edition (IEMA, 2022), a maximum design scenario has been provided given potential use of Sulphur Hexafluoride (SF_6) at the onshore substation at Oakendene. In the case of the existing National Grid Bolney substation extension, the asset is of a much smaller scale and the quantities of SF_6 therefore smaller. Initial design estimates suggest the quantity of SF_6 associated with the Bolney site design would be 600 – 700 kg. This does not change the assessment of significance regarding the design proposal.
CC 1.5	The Applicant	*Greenhouse Gas Emissions - Sulphur Hexafluoride (SF6)* NPS EN-5 states Applicants should at the design phase of the process consider carefully whether the proposed development could be reconceived to avoid the use of SF6-reliant assets. a) Explain what other designs have been considered that avoid the use of SF6 and why they have been rejected.	It is not that Sulphur Hexafluoride (SF_6) free designs have been rejected, it is that SF_6 designs represent a worse case for environmental impact assessment. The technology for SF_6 free gas insulated switch gear is very much under development and the timelines for commercial products being available in the market are envisaged to be within the timeline of the Proposed Development. However, as the availability of such products is limited at present, particularly for the extra high voltages proposed at the onshore substation at Oakendene and the existing National Grid Bolney substation extension, it is not possible to make a firm commitment for the use of such technology. National Grid have recently commissioned their first 400kV SF_6 free GIS substation at Littlebrook and it is expected that a SF_6 free 400kV GIS will be installed as a pilot project in Germany during 2024. These projects will be helping the development and testing of this brand new and more complicated technology, which the Applicant will be following closely going forward. The Applicant will also consider the use of air insulated switch gear (AIS), but the final decision on this would be dependent on such equipment being able to physically fit within the Proposed Development footprint and also fit within other proposed environmental parameters. Use of AIS with pressurised air would mean larger noise impacts. These could be mitigated by enclosure in a building, but this would therefore mean due consideration of the visual impact this could impose, given the scale of building required to house the onshore substation.
		b) Explain how SF6 gas would be prevented from being released into the atmosphere during decommissioning of any substations or other assets where it has been used.	Decommissioning works will follow best practice protocol as exemplified in Conseil International des Grands Réseaux Electriques (CIGRE) published guidance (2023) and related fluorinated gas (F-gas) regulatory guidance. Major suppliers are offering end-of-life decommissioning services, including recycling of Sulphur Hexafluoride (SF_6) and verified reporting of safe disposal of the equipment.
CC 1.6	The Environment Agency	*Greenhouse Gas Emissions* Comment, if necessary, on the Applicant's greenhouse gas assessment in Appendix 29.1 Supporting data for the Green House Green assessment [APP-222] or the Greenhouse Gas Emissions sections of the ES, Chapter 29 [APP-070].	

Table 2-9 Design

Ref	Question To:	Question	Applicant's Response
DE 1.1	The Applicant	*Good Design* Notwithstanding that the ES describes how the Proposed Development responds to 'Good Design', notably at Section 15.7 of ES Chapter 15 Seascape [APP-056], explain how the proposed development achieves 'Good Design'. Explain how the Applicant would ensure 'Good Design' is carried through all stages of the development including post-decision and construction.	The Applicant will submit an Offshore Design Statement setting out how the offshore elements of the Proposed Development achieve 'Good Design' at Deadline 4. See Applicant's response to **DE1.3** regarding 'Good Design' for the onshore elements of the Proposed Development.
DE 1.2	The Applicant Horsham DC	*Design Code* Notwithstanding the Design Principles detailed within the Design and Access Statement (DAS) [AS-003] and secured by Requirement 8 of the draft DCO [REP2-002], comment upon the need for design code certified and secured in the draft DCO for the design of the Work No 16 (onshore substation).	The Applicant considers that the design principles provided and secured in the Development Consent Order (DCO) (as referenced in Examining Authority Written Question **DE 1.2**) provide the appropriate and necessary embedded environmental measures, reflecting the mitigation hierarchy. The addition of a design code would not provide any additional benefit beyond that which could be secured in the design principles. The Applicant has reviewed the design principles and content of the **Design and Access Statement** **[AS-003]** in light of Horsham District Council's comments in their Local Impact Report **[REP1-044]** and has provided an updated **Design and Access Statement** **[AS-003]** at Deadline 3. The Applicant notes that National Policy Statement (NPS) EN-1 (2011 and 2023) refer to the use of design principles for energy projects that fall under the Planning Act (2008). Design codes are referenced in the National Planning Policy Framework paragraph 133 with the responsibility for local planning authorities to produce these to guide development design.
DE 1.3	The Applicant	*Work No 16* Justify the extent and definition of design principles within the DAS [AS-003] and embedded environmental measures within the Commitment Register [REP1-015] for Work No 16 (onshore substation) both in relation to achieving 'Good Design' and the impact upon heritage assets.	The Applicant considers that the design principles for Work No. 16 achieve 'Good Design' (as defined in National Policy Statement (NPS) EN-1 (2011 and 2023)) including those set out to minimise the impact on the setting of Grade II Listed Oakendene Manor. The Applicant notes that the updated **Design and Access Statement** **[AS-003]** at Deadline 3 (and secured by Requirement 8 of the **Draft Development Consent Order** **[REP2-002]**) has sought to provide further definition or clarity of the principles identified in the DCO Application including regarding the architectural strategy and provision of advance planting. The **Design and Access Statement** **[AS-003]** (updated at Deadline 3) includes the following general principles following the mitigation hierarchy and reflecting the requirements of 'Good Design' from NPS EN-1 (2011 and 2023) summarised as follows: • Avoidance – employing trenchless installation of cables into and out of the site to avoid loss of existing perimeter vegetation screening and retaining tree lines on the west that contribute to setting of Oakendene Manor, avoiding affecting the views from the Manor toward the boating lake, siting the onshore substation footprint outside areas of flooding; • Reduce – siting the onshore substation footprint in the south of the site to reduce setting effects, minimising loss of habitats and vegetation including historic parkland planting through siting, provision of drainage scheme, embedding sustainability and climate resilience into the design; and • Minimise – provision of screen planting including planting of parkland style trees to minimise views of the onshore substation from Oakendene Manor.
DE 1.4	The Applicant	*Work No 20* Explain why the decision on the extension to the existing substation insulation i.e. Air Insulated Substation (AIS) or	The design of the switch gear apparatus is contingent on the overall electrical design of the Proposed Development and will be developed in cooperation with National Grid who is the operator of the existing Bolney substation.

Ref	Question To:	Question	Applicant's Response
		Gas Insulated Substation (GIS) is deferred to the detailed design stage.	It must be noted that National Grid will be the entity designing and constructing the Bolney extension bays with the Applicant being the customer. The decision of AIS or GIS design cannot be taken by National Grid until other technical design aspects are determined, which will occur post consent. The Applicant is in regular contact with National Grid regarding the development of the Bolney extension bay.

Table 2-10 Flood Risk

Ref	Question To:	Question	Applicant's Response
FR 1.1	The Applicant The Environment Agency	*Flood Mitigation and Permitting at the Landfall at Climping* The Environment Agency stated in their Relevant Representation [RR-116] that further details of the chosen landfall connection and associated work at Climping, including details of any flood mitigation would be required and that a Flood Risk Activity Permit would need to be obtained prior to the commencement of such works. **The Applicant to confirm**: a) If the appropriate Flood Risk Activity Permit would be obtained from the relevant authority prior to the commencement of any works in and around Climping beach landfall site.	The Applicant confirms that the appropriate Flood Risk Activity Permit (FRAP) would be obtained from the relevant authority prior to the commencement of any works in and around the Climping beach landfall site which are subject to permitting regulations. It will be the responsibility of the Contractor working on behalf of the Applicant to apply for and obtain the necessary permits and consents, including FRAPs from the Environment Agency, prior to commencing work in the locations that these are required, as per The Environmental Permitting (England and Wales) Regulations 2016. The requirement for permitting is captured within commitment C-17 set out in the **Commitments Register [REP1-015]** (updated at Deadline 3) will be secured via adherence with The Environmental Permitting (England and Wales) Regulations 2016. The Applicant will be responsible for ensuring that the overall process of obtaining permits and consents is followed. Permits and consents will be obtained at the appropriate time, which will be post-DCO consent and prior to the commencement of works in locations subject to the permitting regulations.
		The Applicant and the Environment Agency to confirm: b) If there is agreement with the Environment Agency on the flood mitigation proposed by the Applicant in this area.	Stakeholder engagement has been undertaken with the Environment Agency during the pre-application stage and up to the DCO Application submission via Expert Topic Group meetings and targeted stakeholder meetings. During these meetings there has been broad agreement on the flood mitigation proposed by the Applicant in the Climping area, as documented in Annex A of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the Environmental Statement (ES) **[APP-216]**. On 09 November 2022, there was a targeted consultation meeting with the Environment Agency in relation to the Climping sea flood defences and general flood risk. This meeting covered constraints at the landfall location and general approach of avoidance of flood risk areas. The Environment Agency shared its Geomorphology Report[1] (Environment Agency, 2020} and useful information about over-washing from recent storms (e.g. Storm Ciara), and both information sets were used to help inform best possible landfall location options (TC-01 and TC-01a) in relation to flood risk (and coastal erosion) as shown in Figure 26.2.3a of **Appendix 26.2: Flood Risk Assessment, Volume 4** **[APP-216]**. The final design, and location of landfall infrastructure between these options will be informed by further studies (secured by commitment C-247 via Requirement 26 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3)). Information was presented in Section 7.2 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** and **Appendix 6.1: Coastal processes technical report; Baseline Description, Volume 4** of the ES **[APP-129]**. During the second Statutory Consultation Exercise held in October – November 2022, the Environment Agency stated in their Section 42 response that "*We support the general approach made to updates to the Flood Risk Screening Assessment. We support the inclusion of a coastal change vulnerability assessment and the approach to fluvial floodplain considerations*" (see Table 26-8 of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**). As noted in paragraph 26.3.22 of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**, further assessment and additional environmental measures were provided at the fifth Expert Topic Group (ETG) meeting on 07 March 2023 to address the Environment Agency Section 42 comment that *"for the proposed Landfall*

[1] Environment Agency (2020). Coastal evolution scenarios between Poole Place and the River Arun: The Geomorphological Panel report – one year on. Bristol; Environment Agency

Ref	Question To:	Question	Applicant's Response
			works at Climping, the positioning of any above ground apparatus and haul road/construction compound would need to be chosen with extreme care" ((see Table 26-7 of **Chapter 26: Water Environment, Volume 2** of the ES **[APP-067]**). Measures were provided by the Applicant such as C -247 (**Commitments Register** **[REP1-015]** (updated at Deadline 3) for ground investigation at the landfall to inform detailed design of the apparatus; commitment C-43 (**Commitments Register** **[REP1-015]** (updated at Deadline 3) for trenchless crossing at the landfall to maintain the integrity of the sea defence; and commitment C-118 (**Commitments Register** **[REP1-015]** (updated at Deadline 3) for an Emergency Flood Response Plan, which are all set out within the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) and secured via Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). These measures were well received amongst the stakeholders including the Environment Agency.
		The Environment Agency to confirm: c) Whether the Applicant has adequately followed the Sequential and Exception Tests related to coastal flooding.	Whilst the Applicant acknowledges that the question is directed towards the Environment Agency, the minutes documented in Annex A of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the Environmental Statement (ES) **[APP-216]** for the meeting on 09 November 2020 (under Meeting Minutes Section 2) specifically relates to agreements made regarding the selection of the landfall location at Climping. The Environment Agency were noted as agreeing in principle with the selection of Climping for the landfall location (as referenced under point 2 of the meeting minutes). This was on the basis that there were no other reasonably available locations along that stretch of coast to make landfall that are not already developed (other options would involve trying to thread the cable through or under areas of existing built development). The Applicant welcomed this support for the selected landfall location, which is of relevance for the Sequential Test, which is considered to be adequately passed (as reported in Section 9 (paragraphs 9.1.17 – 9.1.20 and 9.1.40) of the **Appendix 26.2 Flood Risk Assessment, Volume 4** of the ES **[APP-216]**.
FR 1.2	The Applicant	*Drainage Proposals for the Proposed Substation Site at Oakendene* Written Representations (WR) were submitted at Deadline 1 from CowfoldvRampion [REP1-087 and REP1-089], Mr Smethurst [REP1-115 to REP1-119] and Ms Davies [REP1-159] regarding flooding and drainage at the proposed substation site at Oakendene. West Sussex CC as the Lead Local Flood Authority made comments regarding flooding at this site expressed in its LIR [REP1-054] and verbally at ISH1. The Applicant is asked to: a) Clearly explain how the proposed drainage from the site would operate at times when the ordinary watercourse to the south of the site is in flood, supporting this with diagrams and calculations. b) Clearly explain whether or not there would be sufficient space for the required calculated storage to ensure no net loss of floodplain storage and to maintain greenfield runoff rates, within the Order Limits, supported with diagrams and calculations. c) Confirm whether or not the deflection or constriction of flood flow routes would be safely managed within the site.	Please see **Appendix E FR: Oakendene Flood Risk** (of this document) for a detailed response to this question which includes supporting information as requested by the Examining Authority.

Ref	Question To:	Question	Applicant's Response
		d) Provide details of and clearly explain the outcomes from assessments of potential impacts from the Proposed Development to changes to the hydrology of this site on ecology. e) Provide details of any proposed changes to the ground level at this site and how this has been incorporated in the Site-Specific Flood Risk Assessment (FRA) and outline drainage proposals. f) Clearly explain the outcome of the Applicant's assessment of the impact of changes to the drainage regime at this site on the potential flood risk to downstream receptors, supported by clear calculations.	
FR 1.3	The Applicant	*Flood Risk at the Proposed Substation site at Oakendene* The Flood Risk Assessment [APP-216] states that the proposed substation site at Oakendene is within Flood Zone 1 and this was confirmed by the Applicant during questioning at ISH1 [EV3-001] whilst Mr Smethurst believes the site falls within Flood Zone 3 [REP1-115]. Figure 26.2.2 in the Flood Risk Assessment [APP-216] shows which areas of the whole of the Proposed Development fall within various flood zones in Figure 26.2.2 but the ExA considers it difficult to see any detail at this scale for the proposed Oakendene substation site. For transparency, submit clear evidence into the examination, through a zoomed in plan, together with explanation to clearly demonstrate which flood zone(s) the proposed substation at Oakendene falls within and clearly explain: a) The definition of flood zones 1, 2, 3a and 3b, particularly differentiating between zones 3a and 3b. b) The definition of Risk of Flooding from Surface Water (RoFSW). c) How the proposed substation site at Oakendene site is located in respect to all sources of flooding.	Please see **Appendix E FR: Oakendene Flood Risk** (of this document) for a detailed response to this question which includes supporting information as requested by the Examining Authority.
FR 1.4	West Sussex CC Horsham DC The Environment Agency	*Flood Risk at the Proposed Substation site at Oakendene* Further to discussion regarding flood risk at the proposed Oakendene substation site at ISH1 [EV3-001] and evidence submitted from CowfoldvRampion [REP1-087 and REP1-089], Mr Smethurst [REP1-115 to REP1-119] and Ms Davies [REP1-159] amongst others, at Deadline 1, confirm whether there are any comments on or outstanding concerns regarding, but not limited to: a) The quality of and conclusions from the Applicant's Site-Specific Flood Risk Assessment [APP-216] at this site, including the approach to, application of and conclusions from the Sequential and Exception Tests. b) Whether the information in the FRA relating to this site is credible, fit for purpose, proportionate to the degree of flood risk and appropriate to the scale, nature and location of development and takes the impact of climate change into account.	The Applicant acknowledges that this question is directed to West Sussex County Council (WSCC), Horsham District Council (HDC) and the Environment Agency. However, the Applicant would like to make reference to a meeting where progress was made with WSCC and HDC on 27 February 2024 in relation to flood risk and drainage at the onshore substation site at Oakendene. The meeting minutes for this are provided in **Annex C** of **Appendix E FR: Oakendene Flood Risk** (of this document) to this response which summarise the discussions. The meeting covered a range of topics which cover some of the themes of the question with a particular focus on the flood risk and drainage approach in the DCO Application b) f) and h); the sequential test a); a review of evidence submitted by CowfoldvRampion including site photographs in relation to the onshore substation g) and consideration of groundwater flooding at the site (k). A number of actions were agreed during the meeting on 27 February 2024 in order to resolve the Principal Areas of Disagreement (PADs) so that they could be transferred into

Ref	Question To:	Question	Applicant's Response
		c) The Applicant's statement that the Oakendene site is situated within Flood Zone 1. d) Whether the development has been steered towards areas with the lowest area of flood risk from all sources of flooding. e) Whether or not the Proposed Development would increase flood risk elsewhere. f) The quality and likely effectiveness of the Applicant's proposed Outline Operational Drainage Plan [APP-223] and ongoing management and maintenance of drainage proposals for this site. g) The evidence submitted by CowfoldvRampion [REP1-087 and REP1-089] and Mr Smethurst [REP1-115 to REP1-119] at Deadline 1 regarding local flooding and drainage at the proposed substation site at Oakendene. h) The conclusion of the Applicant's assessment of the impact of changes to the drainage regime and construction and operation of the Proposed Development at this site on the potential flood risk to downstream receptors. i) The Applicant's conclusions on potential impacts from the Proposed Development to changes to the hydrology of this site on ecology. j) The Applicant's conclusion regarding no loss of net flood plain storage and maintenance of greenfield runoff rates. k) Concern regarding potential groundwater flooding at this site. l) Whether the proposed drainage system is feasible and whether it complies with National Standards published by Ministers under paragraph 5(1) of Schedule 3 to the Flood and Water Management Act 2010. m) Whether the draft DCO [REP2-002] would give the most appropriate body the responsibility for maintaining the proposed drainage system.	matters of agreement in future versions of the Statements of Common Ground (SoCGs). The following points provide a summary of these agreements: • PAD WSCC53 **[AS-008]** – Acknowledgement of Ordinary Watercourse Consent from WSCC as Lead Local Flood Authority (LLFA). Following discussion, all parties agreed that this matter can be transferred to the SoCG as an agreed matter; • PAD WSCC54 **[AS-008]** – Surface water flood risk considered within emergency response plan. WSCC questioned whether stockpiling of materials could impact flow pathways. The Applicant highlighted the measures in this regard set out in Table 8.1 of the **Flood Risk Assessment, Volume 4** of the ES **[APP-216]**, which are secured in the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3), and the surface water mapping provided in Figure 26.2.5 of the **Flood Risk Assessment, Volume 4** of the ES **[APP-216]**. Following discussion, all parties agreed that this matter can be transferred to the SoCG as an agreed matter; and • PAD WSCC55 **[AS-008]** – Winter flooding and groundwater flood risk at Oakendene substation. Following discussion, WSCC advised that this matter can be transferred to the SoCG as an agreed matter, subject to groundwater monitoring at one location, ideally over the winter period, at the detailed design stage. This has been provided in a new commitment C-293 within the Commitments Register **[REP1-015]** (updated at Deadline 3) and is documented in both the **Design and Access Statement** **[AS-003]** (updated at Deadline 3) and the **Outline Operational Drainage Plan** **[APP-223]** (updated at Deadline 3) and will be secured via Requirement 8 for the detailed design of the onshore substation and Requirement 17 for the Operational Drainage Plan in the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). The points above covered all of the PADs received to date in relation to flood risk and drainage. There were no further points of disagreement raised by WSCC/HDC at the time. Also it is noted by the Applicant that **Appendix E FR: Oakendene Flood Risk** (of this document) (which covers the Applicant's response to the Examining Authority's Written Questions **FR1.2** and **FR1.3**) also provides further supporting information which addresses points c) – f) and h) to l).
FR 1.5	The Applicant West Sussex CC Horsham DC	*Natural Flood Management* **The Applicant** State whether mitigation measures have planned to make as much use as possible of natural flood management techniques.	The Applicant confirms that mitigation measures have been put in place to make as much use of natural flood management techniques. In accordance with commitments C-73 and C-140 within the **Commitments Register** **[REP1-015]** (updated at Deadline 3), drainage measures will be implemented for all elements of the temporary and permanent infrastructure in accordance with Sustainable Drainage System (SuDS) principles. These measures are secured via Requirement 22 (4) (c) Construction Phase Drainage Plan for temporary infrastructure and Requirement 17 Operational Drainage Plan in the **Draft Development Consent Order** [**REP2-002]** (updated at Deadline 3). SuDS is a form of natural flood management (NFM), designed to manage and treat surface water through natural processes and provide additional multi-disciplinary benefits.

Ref	Question To:	Question	Applicant's Response
			The **Outline Operational Drainage Plan [APP-223]** (updated at Deadline 3) outlines the approach to manage surface water drainage through the operation and maintenance phase at the onshore substation at Oakendene, following the drainage hierarchy and puts forwards a range of relevant SuDS features including a swale to be vegetated with wet tolerant grassland species mix, and multiple attenuation basins with wet woodland.
		West Sussex CC and Horsham DC Comment on the adequacy of the proposed mitigation measures and whether they utilise natural flood management techniques. If not, provide alternative suggestions.	
FR 1.6	West Sussex CC	*Local Flood Risk Management Strategy* Confirm that the Proposed Development is in line with the local flood risk management strategy.	The Applicant acknowledges that this question is directed to West Sussex County Council (WSCC), however it can confirm that the Proposed Development is in accordance with the WSCC Local Flood Risk Management Strategy[2] as set out in Section 2 and Table 2-3 of the **Appendix 26.2**: **Flood Risk Assessment, Volume 4** of the Environmental Statement **[APP-216]**.
FR 1.7	West Sussex CC Horsham DC Arun DC The Environment Agency	Comment on any outstanding concerns regarding flood risk related to the Proposed Development as a whole, other than the Oakendene site raised in questions FR1.2 to FR1.4, related to but not limited to: a) The quality of and conclusions from the Applicant's Site-Specific Flood Risk Assessment [APP-216], including the approach to, application of and conclusions from the Sequential and Exception Tests. b) Whether the information in the FRA is credible, fit for purpose, proportionate to the degree of flood risk and appropriate to the scale, nature and location of development and takes the impact of climate change into account. c) Whether the development has been steered towards areas with the lowest area of flood risk from all sources of flooding. d) Whether or not the Proposed Development would increase flood risk elsewhere. e) Whether or not there would be a net loss of floodplain storage.	

[2] West Sussex County Council (WSCC), (2014). *Local Flood Risk Management Strategy (2013 – 2018).* [Online] Available at: Local Flood Risk Management Strategy (westsussex.gov.uk) [Accessed: April2024].

Table 2-11 Historic Environment

Ref	Question To:	Question	Applicant's Response
HE 1.1	The Applicant	*Heritage Assets* Paragraph 4.7.63 of the Planning Statement [APP-036] states that the use of alternative HDD Compounds TC 11a and TC 17 could reduce the magnitude of change on the setting of The Old Cottage and Green Common Farmhouse. Provide justification for not stipulating the location of the HDD Compounds at this location during the application stage.	The Applicant seeks to retain optionality at the DCO Application stage as no ground investigation or detailed design has been undertaken. Selection of the temporary trenchless crossing compound location will be made following completion of ground investigations at detailed design stage post DCO consent. The assessment in **Chapter 25: Historic environment, Volume 2** of the Environmental Statement (ES) **[APP-112]** identifies that for the grade II listed The Old Cottage (NHLE 1027714) if TC-11 was chosen, the magnitude of change would be Low, which would produce a Moderate adverse effect, which given the temporary change to setting, would be Not Significant. However, selection the alternative TC-11a would reduce the magnitude to Very Low resulting in Minor adverse effects which would also be Not Significant. Whilst the choice of trenchless crossing compound would alter the assessed magnitude of change, neither option would result in a significant effect. Any effect would be time-limited. For the grade II listed Green Common Farmhouse (NHLE 1284745), the choice of TC-17 or TC-17a would not alter the assessed magnitude of change owing to proximity of onshore installation works for the trenched cable and the temporary nature of the onshore cable installation works. The Applicant notes the slight discrepancy between the magnitude of change on the setting of The Old Cottage stated in the **Planning Statement** **[APP-036]** and the correct magnitude of change stated in **Chapter 25: Historic environment, Volume 2** of the Environmental Statement (ES) **[APP-112]**. The Applicant will amend the Planning Statement via an erratum to ensure the documents align.
HE 1.2	Mid Sussex DC	*Heritage Assets* Given the scoping out of effects upon Coombe House, Mid Sussex DC LIR in its LIR (paragraphs 4.48 to 4.50) [REP1-046] and the Applicant's response submitted at Deadline 2 [REP2-023], comment upon and justify the contribution of the site to the setting of Coombe House and the level of effect upon Coombe House, a Grade II Listed Building, from the proposed extension to the existing Bolney Substation. Justify the need for further mitigation at this location over and above that already shown on the illustrative landscape plans at Appendix D of the DAS [AS-003] given the Applicants scoping out of effects upon Coombe House.	
HE 1.3	Arun DC	*Heritage Assets* Comment upon the Applicants responses to paragraph 2.1.20 of table 2.1 [REP1-017] and response to LIR paragraphs 9.21 & 9.22 [REP2-021] that 45-47 South Terrace is scoped out of effects (table 5.1 Appendix 25.7 settings assessment scoping report vol 4 ES) [APP-213].	
HE 1.4	Arun DC	*Locally Listed Buildings* Comment upon the Applicants' conclusions on the magnitude of change on The South Terrace Area of Character and the locally listed buildings at 48-95 South Terrace & 16 Granville Road at table 2-1 response to	

Ref	Question To:	Question	Applicant's Response
		paragraph 2.1.20 [REP1-017] and response to LIR paragraphs 9.21 & 9.22 [REP2-021].	
HE 1.5	Arun DC	*Heritage Assets* Comment upon the Applicant's conclusions on the magnitude of change and resulting significance of effect of the compounds for work numbers 8, 9 and 10 in response to paragraphs 9.4 and 9.7 [REP2-021] upon the Heritage Assets identified in the above LIR paragraphs [REP1-039].	
HE 1.6	The Applicant	*Heritage Assets* Comment on Ms Turok's RR [RR-376] and CowfoldvRampion WR section 11 [REP1-089] that both identify Kent Street as an Historic Area with many Listed Buildings effected by the Proposed Development.	The Kent Street area broadly comprises the convergence of Kentstreet Lane and Kent Street with Buckhatch Lane, together with adjacent farms, properties and surrounding rural fields. Kent Street is not identified as a designated heritage asset, nor is it identified by the West Sussex Historic Environment Record (HER). There are three listed buildings along Kentstreet Lane and Kent Street, and additional listed buildings within the wider area between Cowfold and Wineham (see Figure 25.2h in **Chapter 25: Historic environment – Figures, Volume 3** of the Environmental Statement (ES) **[APP-112]**, which have been considered as part of the scoping exercise in **Appendix 25.7: Settings assessment scoping report, Volume 4** of the ES **[APP-213]**. Those listed buildings (which includes the three along Kentstreet Lane and Kent Street) which have been scoped in are assessed in **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**, with relevant baseline information provided in **Appendix 25.8: Onshore heritage asset baseline report, Volume 4** of the ES **[APP-214]**. Of the three listed buildings along Kentstreet Lane and Kent Street, all were scoped in for effects during the construction phase but were scoped out for effects arising during the operation and maintenance phase. The assessment identified a low magnitude of change during the construction phase for the grade II listed King's Barn (NHLE 1027089) resulting in a moderate adverse effect which would be not significant. No effect was identified for grade II listed Vadgers (NHLE 1027293) and Potts Farmhouse (NHLE 1027292). Figure 25.2.2h in **Appendix 25.2: Onshore historic environment desk study, Volume 4** of the ES **[APP-200** and **APP-201]** illustrates the historic landscape character for the proposed DCO Order Limits and Study Area, including that of Kent Street. The area is characteristic of the wider landscape within *Zone 3: Low Weald*, as broadly described in Section 4.2 of **Appendix 25.2: Onshore historic environment desk study, Volume 4** of the ES **[APP-200** and **APP-201]**, which is largely agricultural land with narrow rural lanes, sporadic farmsteads and pockets of woodland. The farmsteads at Kent Street are of post medieval origin with some modern period change/development. These farmsteads are identified in the Historic Environment Record (HER) data presented in the baseline in **Appendix 25.2: Onshore historic environment desk study, Volume 4** of the ES **[APP-200** and **APP-201]** and **Appendix 25.1: Gazetteer of onshore heritage assets, Volume 4** of the ES **[APP-199]**. The adjacent field systems are a result of enclosure during the medieval period. The rural settlement and field patterns in this area are typical of the wider Low Weald landscape. Section 4.7 of **Appendix 25.2: Onshore historic environment desk study, Volume 4** of the ES **[APP-200** and **APP-201]** provides a discussion of the baseline information for the medieval and post medieval periods for Zone 3, within which the area of Kent Street lies. The assessment in **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]** considers effects on historic landscape character. For Zone 3, a low magnitude of change during the construction

Ref	Question To:	Question	Applicant's Response
			phase was assessed resulting in a minor adverse effect which would be not significant. A medium magnitude of change was assessed for the operation and maintenance phase of the onshore substation, resulting in a minor adverse effect which would be not significant. As evidenced by the available baseline information referred to above, Kent Street, is not of significant historical importance.
HE 1.7	Brighton & Hove City Council	*Heritage Assets* The Applicant has responded at Deadline 2 [REP2-025] regarding concerns on the conclusion on the impact of offshore works on all heritage features being characterised as 'Not Significant' in the ES. Clarify the assessment outcome of specific heritage assets that are being disputed.	
HE 1.8	Historic England SDNPA West Sussex CC	*Onshore Archaeology* In the context of ES Chapter 25 Historic Environment [PEPD-020] that identifies a high potential of archaeological remains of high heritage significance within the South Downs area and further to SDNPA Principal Areas of Disagreement Statement (PADS) point 7 [AS-006], West Sussex CC PADS points 38 to 40 [AS-008] and Historic England's RR [RR-146], comment upon the Applicant's assertion that further investigation would not change the outcome of the assessment at table 4-2 in response to paragraph 2.33.2 [REP1-017].	
HE 1.9	Historic England	*Onshore Archaeology* In the context of the applicant's second statutory consultation exercise feedback captured at table 25.7 of ES Chapter 25 Historic Environment [APP-066] and Historic England's concerns [RR-146], explain whether the amendment to C-225 [APP-254] to 'preservation by record' is preferable to the 'retention in situ' of unexpected archaeological remains of national significance that maybe discovered during works.	The Applicant recognises that question **HE1.9** is directed at Historic England. However, the Applicant notes, as stated in **Deadline 2 Submission – 8.49 Category 8: Examination Documents – Applicant's Responses to Prescribed Consultees' Written Representations [REP2-026]** (see reference 0.4 and 6.9), it is the view of the Applicant that the priority is for avoidance of impacts to archaeological remains of national significance ('retention in situ'), followed by 'preservation by record' where impacts are unavoidable. This is reflected in commitment C-225 (in the **Commitments Register [REP1-015]** (updated at Deadline 3) and secured through Schedule 1, Part 3, Requirement 19 of **Draft Development Consent Order [REP2-002]** (updated at Deadline 3)) which provides for mitigation by design through engineering responses. The **Outline Onshore Written Scheme of Investigation [APP-231]** has been updated at Deadline 3 to include a protocol which sets out the procedure following the discovery of archaeological remains of high heritage significance (see Appendix B of the **Outline Onshore Written Scheme of Investigation [APP-231]**). This protocol presents a staged approach including discovery, assessment, avoidance where possible and mitigation by record. For each stage, relevant actions, documentation and consultation requirements are outlined. The protocol clearly demonstrates the need to prioritise avoidance.
HE 1.10	The Applicant	*Onshore Archaeology* In the context of Historic England's concern raised in RR and Deadline 1 [RR-146 & REP1-055] on how the ES has assessed magnitude of impact, the significance of effect, and the use of embedded environmental measures as mitigation to subsequently downgrade the effects, provide	The Applicant makes reference to previous Development Consent Order (DCO) applications to demonstrate the appropriateness of the assessment methodology utilised in **Chapter 25: Historic environment, Volume 2** of the Environmental Statement (ES) **[PEPD-020]**. Recent previous examples which have followed very similar ES methodology with the same consideration of embedded environmental measures are HyNet Carbon Dioxide Pipeline, Sizewell C nuclear new build and Yorkshire Green grid connection.

Ref	Question To:	Question	Applicant's Response
		commentary to justify the precedents quoted in response to paragraph 6.7 of table 2-1 Applicants response to Historic England's WR Doc Ref 8.49 [REP2-026].	For each of these, the historic environment assessments undertaken identified the effects on archaeological receptors in the absence of further mitigation (as set out in an Overarching Written Scheme of Investigation) and also considered the effect on archaeological receptors subsequent to further mitigation, whereby the archaeological interest of remains would be partially mitigated through appropriate investigation, recording and dissemination. Consideration of this mitigation in the assessment resulted in a change in the assessment, whereby the magnitude of change was reduced. However, where adverse change was assessed, the resulting effect still constituted harm to the archaeological receptors, as per the assessment methodology set out in the respective DCO application documents. No objections were made to the ES assessment methodology used in these DCO applications which were in line with relevant legislation and policy, and for which Historic England was a statutory consultee. The approach was accepted by the Examining Authority in each case. For example, the Examining Authority's Report for the HyNet Carbon Dioxide Pipeline confirmed agreement with this approach in paragraph 5.8.35, stating that "*The ExA agrees the controlled and recorded removal of Bronze Age funerary archaeological remains would decrease the magnitude of impact from major to moderate*". The Secretary of State's Decision Letter of 20 March 2024 notes the Examining Authority's conclusions in this regard. For the Yorkshire Green project, the approach to the use of embedded environmental measures was adopted, for example in consideration of potential effects on Marston Moor Registered Battlefield. This was agreed by Historic England and paragraph 3.12.33 of the Examining Authority's Report also confirms agreement. For the Sizewell C project, the Examining Authority's Report noted the applicant's approach at paragraphs 5.13.42 and 5.13.43 with respect to the Main Development Site, that "any significant deposits and features within the site, could be appropriately investigated, recorded and disseminated, thereby preserving the archaeological interest of remains" and confirmed agreement with this approach in paragraph 5.13.47. The same ES assessment methodology is used for Rampion 2 and is also in line with relevant legislation and policy as set out in **Chapter 25: Historic environment, Volume 2** of the ES **[PEPD-020]**. For further explanation, the Applicant refers back to the response in paragraph 6.7 of Table 2-1 **Deadline 2 Submission – 8.49 Category 8: Examination Documents – Applicant's Response to Prescribed Consultees' Written [REP2-026]**. It should also be noted that the mitigation approach, as set out in the **Outline Onshore Written Scheme of Investigation [APP-231]** (updated at Deadline 3), is to avoid or limit effects through detailed design measures first, and then resort to preservation by record, and the assessment was undertaken on this basis.
HE 1.11	The Applicant	*Marine Archaeology* Section 16.8 of Chapter 16 Marine Archaeology of the ES [APP-057] at paragraph 16.8.13 states that any effects with a significance level of minor or less will be considered as not significant. However, table 16-19 Significance Assessment Matrix shows scenario's which could potentially be significant for minor magnitude of change when the sensitivity of receptor is very high/high. Confirm what level is considered to be significant for the purposes of Marine Archaeology.	Section 16.8 of **Chapter 16: Marine archaeology, Volume 2** of the Environmental Statement (ES) **[APP-057]** paragraph 16.8.13 have been added to the errata. The reference to effects with a significance level of minor or less as not significant is not relevant to this chapter and was included in error. Table 16-19 within **Chapter 16: Marine archaeology, Volume 2** of the ES **[APP-057]** assesses the significance of the magnitude of change on the sensitivity of receptors. How the embedded environmental measures are more specifically employed for each of the identified potential effects is described in Sections 16.9-16.11 within **Chapter 16: Marine archaeology, Volume 2** of the ES **[APP-057]**.

Table 2-12 Minerals

Ref	Question To:	Question	Applicant's Response
MI 1.1	West Sussex CC SDNPA	*Mineral Resource Assessment and Mitigation Measures to Safeguard Minerals* West Sussex CC expresses concern in its LIR [REP1-054] about the mitigation measures proposed by the Applicant to safeguard minerals. West Sussex CC state that the Applicant's proposed mitigation measure is a Commitment, secured though the OCoCP [APP-224], for the Applicant to produce a Minerals Management Plan (MMP) that is prepared prior to construction. The SDNPA support this concern in their LIR [REP1-049] raising that the Applicant has not yet provided a Minerals Management Plan (MMP). Additionally, West Sussex CC believes the submitted OcoCP is lacking in detail. The Applicant has provided information on minerals in Chapter 24: Ground conditions, Volume 2 of the ES [APP-065]. The Applicant has responded in [REP2-020], explaining why they could not produce a MMP at this stage and that the information provided is proportionate with proper	The Applicant recognises that this question is directed at West Sussex County Council and South Downs National Park Authority but notes the following points. The Applicant notes that the commitment referenced to produce a MMP is a Materials Management Plan rather than a Minerals Management Plan (Commitment C-69 in **Commitments Register** **[REP1-015]** (updated at Deadline 3)) included within the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) and secured via Requirement 22 within the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3)). In terms of minerals, the **Outline Code of Construction Practice** **[PEPD-033]** commits (Commitment C-69 in the **Commitments Register** **[REP1-015]** (updated at Deadline 3)) 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*". Prior extraction of minerals for off-site sales/use is unlikely to be practical, as this would leave a substantial void along the onshore 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 onshore cable construction. This material will therefore not be sterilised. Whilst minerals remaining under the onshore cable route would be sterilised for the duration of the construction and operation and maintenance phases, they would become available again upon decommissioning and the resource is therefore not sterilised in perpetuity. As noted in the **Deadline 2 Submission – 8.43 Category 8: Examination Documents – Applicant's Responses to West Sussex County Council's Deadline 1 Submissions** **[REP2-020]**, it is not possible to calculate in detail the specific volumes of mineral that may be affected at this time, nor is it possible to identify the quality of this mineral (and therefore what use it would be suitable for). For soft sand, a worst-case approach is therefore considered in **Chapter 24: Ground conditions, Volume 2** of the ES **[APP-065]** whereby all of the soft sand encountered is considered to be sterilised. The stage specific Code of Construction Practice, and its accompanying MMP, will need to be written specific to the relevant stage of the construction works for the onshore cable route in accordance with Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). It will therefore provide specific details on quantity and quality of the mineral and the Applicant considers this should provide sufficient confidence that mitigation will be enacted. Further information on the proposed MMP is provided within the response to the Examining Authority Written Questions on Soils and Agriculture (Examining Authority Written Question reference **SA1.1**) of **Table 2-16** of this document. The Applicant has held an Expert-to-Expert meeting with West Sussex County Council on 23 April 2024 to discuss whether concerns have been alleviated regarding the proposed MMP. During this meeting, West Sussex County Council provided greater clarity on the detail they were seeking at this stage of the Project, both in terms of the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) and Minerals Management Plan, and the assessment of the mineral safeguarding situation against their Local Plan policies. West Sussex County Council advised they would be presenting this information within their Deadline 3 response. The Applicant will review the information provided by West Sussex County Council at Deadline 3 and will consider a response to matters raised for Deadline 4.

Ref	Question To:	Question	Applicant's Response
		consideration based on the information available and, where appropriate, considers worst case scenarios. Explain whether agreement been reached on this issue of: a) the timing of the provision of a MMP and b) the level of detail in the OCoCP. If there are outstanding concerns, provide details of further information that the Applicant should provide.	

Table 2-13 Noise and Vibration

Ref	Question To:	Question	Applicant's Response
NV 1.1	The Applicant	*Management of Noise and Vibration* The ExA notes that a Noise and Vibration Management Plan (NVMP), would be submitted to the relevant planning authority for approval, secured as part of the detailed CoCP under Requirement 22 of the draft DCO [REP2-002]. The ExA considers an outline plan would be useful at this stage of the Examination. Provide an Outline Noise and Vibration Management Plan (ONVMP) at Deadline 3, which by reference to the assessments reported in the ES, sets out all the key noise and vibration management measures in a single document. The ONVMP should also include outline proposals for monitoring noise and vibration and complaint procedures which would be incorporated in stage specific NVMPs.	The Applicant has submitted an **Outline Noise and Vibration Management Plan** (**Document Reference 8.60**) for onshore works at Deadline 3.
NV 1.2	The Applicant	*Construction – Receptors* Table 21-10 of ES Volume 2, Chapter 21: Noise and Vibration [PEPD-018], identifies receptor groups using "Leisure Areas" including Public Rights of Way (PRoW) as requiring assessment for noise and vibration. Explain how the assessment of such areas has been carried out and the outcome.	It should be recognised that Leisure Area receptors may be sensitive to noise but are highly unlikely to be sensitive to vibration. Table 21-11 of **Chapter 21: Noise and vibration, Volume 2** of the Environmental Statement (ES) **[PEPD-018]**, clarifies that in the context of the assessment, those receptors that would be scoped into the assessment included "*quiet or important outside leisure areas*". Specific leisure areas and Public Rights of Way (PRoWs) identified as being particularly quiet or important and therefore assessed in **Chapter 21: Noise and vibration, Volume 2** of the Environmental Statement (ES) **[PEPD-018]** are: the Coastal Promenade, and footpaths and right to roam land in areas of high tranquillity within the South Downs National Park (SDNP). These were assessed qualitatively within Paragraphs 21.9.12 - 21.9.15 and Paragraphs 21.9.21 to 21.9.27 of **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]**. As reported in paragraph 21.9.31 of **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]**, the noise levels in the SDNP and Coastal Promenade were assessed as being of minor adverse effect and not significant. The Applicant considers that a qualitative assessment is more reflective of the impacts from noise upon the users of the footpaths and areas of right-to-roam land. As pedestrians pass the work sites, there may be a short duration of noise, reaching its peak as the pedestrian passes the nearest part of the works but their exposure over a day and over the longer 1-month temporal threshold would be much lower. The duration of exposure is an important part of any quantitative assessment. Assuming a worst case of 10 minutes of exposure to construction noise would correlate to a time correction of -19dB on the daytime noise experienced. This means that noise exposure on receptors on PRoWs and areas of right-to-roam would rarely be significant, and for that reason are not usually assessed quantitatively.
NV 1.3	The Applicant	*Construction – Receptors*	a) The onshore noise and vibration Study Area is described within paragraph 21.4.2 of **Chapter 21: Noise and vibration, Volume 2** of the Environmental Statement (ES) **[PEPD-018]** which states:

	Given the uncertainty at this stage, regarding the exact line of the onshore cable corridor within the draft Order Limits, provide: a) An explanation of how receptors requiring assessment for noise and vibration were identified.	"*The spatial scope of the noise and vibration assessment is defined as a 1.5km buffer zone around an indicative onshore cable corridor centreline and the boundary of the onshore substation site. The Study Area also includes 100m around the access routes and 10m around roads affected by changes in road traffic from construction. The Study Area, presented on Figure 21.1, Volume 3 of the ES (Document Reference: 6.3.21) is considered sufficient to include any effects that might be possible from the worst-case noise emissions from the Proposed Development at the most sensitive times (for instance HDD at night). This Study Area also includes a buffer for potential movement of the onshore cable corridor within the proposed DCO Order Limits.*" (Paragraph 21.4.2 of **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]**). The Study Area around the onshore cable corridor is 1.5km which was applied as a buffer to an indicative onshore cable corridor centreline of the proposed DCO Order Limits. This is considered by the Applicant as being conservative as, for example with respect to the construction study areas, Design Manual for Roads and Bridges (LA111) suggests that for road scheme projects "*a study area of 300m from the closest construction activity is normally sufficient to encompass noise sensitive receptors*". The assessed noise and/or vibration sensitive receptors within the onshore noise and vibration Study Area were generally the nearest noise-sensitive receptors to the onshore works which were identified from mapping and aerial photography within the relevant study area / buffers.
	b) An explanation of how the worst-case effects of noise and vibration for these receptors were calculated.	b) The noise and vibration assessment has been undertaken in line with the parameter-based design envelope approach which considers a maximum design scenario as outlined in paragraphs 21.7.1 and 21.7.2 and Table 21-19 of **Chapter 21: Noise and vibration, Volume 2** of the Environmental Statement (ES) **[PEPD-018]**. The maximum design scenario was defined in different ways according to the project phase and activity/impact and was informed by information provided in **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**. This is summarised below however this should be read in conjunction with Table 21-19 of **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]**: • **Construction and operation of temporary construction compounds**: ▸ Location and extent of temporary construction compounds as identified in **Onshore Works Plans [PEPD-005]**. ▸ Core working hours outlined in **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**; and ▸ Construction plant numbers and work durations were calculated for a variety of construction activities required to deliver the Proposed Development in line with the information outlined in **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**. These were compared with standard plant noise levels provided within Annex E of British Standard (BS) BS:5228-1 to determine plant sound power levels for each activity. The full equipment list, including sound power levels and percentage on-time are presented in **Appendix 21.2: Construction plant list, Volume 4** of the ES **[PEPD-028]**. • **Landfall works and trenchless crossings (HDD):** ▸ Temporary, continuous work may be required for HDD and therefore, the assessment considers a 24-hour working day. The worst case daytime levels were applied to the night-time working, even though the plant usage is likely to be lower intensity at night than during the day; and ▸ Construction plant numbers and work durations were calculated for a variety of construction activities required to deliver the Proposed Development in line with the information outlined in

Chapter 4: The Proposed Development, Volume 2 of the ES **[APP-045]**. These were compared with standard plant noise levels provided within Annex E of British Standard (BS) BS:5228-1 to determine plant sound for each activity. The full equipment list, including sound power levels and percentage on-time are presented in Appendix 21.2: Construction plant list, Volume 4 of the ES **[PEPD-028]**.

- **Construction of the onshore substation:**
  - Location and size of onshore substation as identified in Onshore Works Plans **[PEPD-005]**. Site works will not be within 60m of residences;
  - Core working hours outlined in Chapter 4: The Proposed Development, Volume 2 of the ES **[APP-045]**; and
  - Construction plant numbers and work durations were calculated for a variety of construction activities required to deliver the Proposed Development in line with the information outlined in Chapter 4: The Proposed Development, Volume 2 of the ES **[APP-045]**. These were compared with standard plant noise levels provided within Annex E of British Standard (BS) BS:5228-1 to determine plant sound for each activity. The full equipment list, including sound power levels and percentage on-time are presented in Appendix 21.2: Construction plant list, Volume 4 of the ES **[PEPD-028]**.
- **Extension works at the existing National Grid Bolney substation:**
  - Location and size of the extension of the existing National Grid Bolney substation as identified in Onshore Works Plans **[PEPD-005]**;
  - Core working hours outlined in Chapter 4: The Proposed Development, Volume 2 of the ES **[APP-045]**; and
  - Construction plant numbers and work durations were calculated for a variety of construction activities required to deliver the Proposed Development in line with the information outlined in Chapter 4: The Proposed Development, Volume 2 of the ES **[APP-045]**. These were compared with standard plant noise levels provided within Annex E of British Standard (BS) BS:5228-1 to determine plant sound for each activity. The full equipment list, including sound power levels and percentage on-time are presented in Appendix 21.2: Construction plant list, Volume 4 of the ES **[PEPD-028]**.
- **Cable trenching works:**
  - Location and size of the onshore cable corridor as identified in the proposed DCO Order Limits outlined in the Onshore Works Plans **[PEPD-005]**;
  - Core working hours outlined in Chapter 4: The Proposed Development, Volume 2 of the ES **[APP-045]**; and
  - Construction plant numbers and work durations were calculated for a variety of construction activities required to deliver the Proposed Development in line with the information outlined in Chapter 4: The Proposed Development, Volume 2 of the ES **[APP-045]**. These were compared with standard plant noise levels provided within Annex E of British Standard (BS) BS:5228-1 to determine plant sound for each activity. The full equipment list, including sound power levels and percentage on-time are presented in Appendix 21.2: Construction plant list, Volume 4 of the ES **[PEPD-028]**.

			The noise assessment for temporary construction compounds, the construction of the onshore substation and trenchless crossing utilised area sources within the noise model and these areas sources were applied two ways. Firstly, as a worst case "maximum" level with all the plant assumed to be operational at the extent of the works nearest to the receptors representing a theoretical maximum construction noise level, and secondly, the geographic average level where the sound is assumed to be generated from the centre of the site. This is a conservative assessment, as the plant number and on-time assumptions are considered by the Applicant to represent a worst case general usage of the worksites. The Applicant notes that, following feedback during the Examination, the core working hours have been updated in the **Outline Code of Construction Practice** **[PEPD-033]** to 08:00 to 18:00 with a 'shoulder hour' for mobilisation and shut down being 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 between objects resulting in loud noises, ground breaking or earthworks. This change in core working hours does not change the assessment outcomes of **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]**.
		c) A 'worst case' noise contour map for cable trenching activities.	Onshore cable trenching activities will progress at approximately 35 metres per day, therefore, any receptor would be exposed to noise from trenching activities for very limited periods with the noise levels changing hour-by-hour, as the activities progress. The use of noise contour maps is relevant for exposure to noise over a reasonable time period, and this does not apply to onshore cable trenching activity. Worst-case noise contour maps have not been produced as they do not provide a meaningful representation of the noise levels at receptors. This is also the approach taken on other linear DCO projects, such as Aquind, Hynet and the recently consented Green Volt offshore wind farm in Scotland, where construction noise was predicted and assessed without noise contours being produced. This approach to construction noise prediction and assessment was, for both Aquind and Hynet, accepted by the Local Planning Authorities and the Examining Authority.
NV 1.4	The Applicant	*Offshore Construction Noise* The ExA notes that paragraph 21.9.78 of ES Volume 2, Chapter 21: Noise and Vibration [PEPD-018] concludes that the temporary noise effects from offshore piling for the foundations of WTGs would not be significant in ES terms. However, West Sussex CC in its LIR [REP1-054) "*noted that construction of the offshore elements of Rampion 1 did result in several complaints/concerns being reported (including report of sleep disturbance), which the Rampion 1 team reported were attributable to foundation piling works combined with specific weather conditions*." Consider whether it would be beneficial for the draft DCO [REP2-002] to include a Requirement limiting the level of offshore construction noise at night in on shore wind conditions, measured at the nearest onshore receptor.	As outlined in **Deadline 2 Submission – 8.43 Category 8: Examination Documents – Applicant's Responses to West Sussex County Council Deadline 1 Submission** **[REP2-020]**, the Applicant recognises the noise complaints encountered during the offshore piling at Rampion 1.Predictions of noise from offshore piling were reported in paragraphs 21.9.73 to 21.9.79 of **Chapter 21: Noise and vibration, Volume 2** of the Environmental Statement (ES) **[PEPD-018]**. The assessment shows predicted levels will be significantly below the threshold of significance. That does not mean offshore piling will be inaudible and as West Sussex County Council indicates, onshore noise levels may be exacerbated by meteorological conditions outside the control of the contractors carrying out the works. Proposals for noise monitoring are further considered by the Applicant within the **Outline Noise and Vibration Management Plan** (**Document 8.60**) provided at Deadline 3 which is Appendix E of the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3). Stage specific Noise and Vibration Management Plans are secured through the Requirement 22 (4) (h) of the **Draft Development Consent Order** **[REP2-002]**.
NV 1.5	The Applicant	*Vibration* A number of residents of Brookside Caravan Park have raised concerns over the proximity of a construction	Vibration levels that need to be exceeded for such damage to occur are above 12.5mm/s (criterion from paragraph 7.4.1 of BS 7385-2:1993 'Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from groundborne vibration') which are much higher than those considered to give rise to

		access road for the Proposed Development and the potential for vibration from HGVs to cause structural damage. The Applicant's response to Relevant Representations on this issue [REP1-017] states: "*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*." Provide an assessment which demonstrates the level of effect from vibration at the caravan park and assess whether this is likely to be significant or not.	adverse effect due to perceptibility, as assessed **Chapter 21: Noise and vibration, Volume 2** of the Environmental Statement (ES) **[PEPD-018]**). Paragraph 21.9.97 of **Chapter 21: Noise and vibration, Volume 2** of the ES **[PEPD-018]** outlines that, at receptors 2m from the road, the magnitude of change (with respect to perceptibility and not structural damage) at all vibration sensitive receptors would be up to Medium, on receptors of Medium sensitivity, resulting in a Minor effect, but Not Significant in environmental impact assessment (EIA) terms. Structural damage from road traffic is not a topic that is scoped into EIA, as the generation of levels from traffic that could give rise to damage to structures are unlikely. Notwithstanding the above, the Applicant presents the following assessment to confirm that vibration from the haul road would not be significant with respect to structural damage. Using the road vehicle vibration calculation from paragraph 3.4.4 of Transport and Road Research Laboratory, Department of Transport research report 246 'Traffic induced vibrations in buildings'; (Watts 1990) $PPV_{max} = 0.028.a.(v/48).t.p.(r/6)^x$ Where *a* is the maximum depth or height of road defect (assumed to be 50 mm) *v* is velocity, assumed to be the maximum 16km/hr with respect to 10 mph site speed limits t is empirically derived soil vibration characteristic presented in Table 7 of that document, p is a coefficient related to the size of defect (the worst case is 1, which was assumed) r is a separation distance (between defect and receptor) of 50m, x is another empirically derived variable reported in Table 7 of the TRRL document. Carrying out the calculations over the range of substrate soils gives rise to a range of maximum PPV of 0.003 $mm.s^{-1}$ (chalk rock) to 0.38 $mm.s^{-1}$ (alluvial soils); comparing these levels to the 12.5mm/s onset of structural damage, vehicles using the access road are very unlikely to result in structural damage inducing vibrations and are therefore not significant with respect to structural damage.
NV 1.6	West Sussex CC	*Onshore Substation* Respond to the Applicant's response contained in [REP2-020] to the issues raised in the LIR [REP1-054] with regard to the impact of operational noise and vibration from the onshore substation on residential receptors and receptors using PRoWs. List any outstanding concerns and provide recommendations for addressing them.	
NV 1.7	Arun DC Horsham DC Mid Sussex DC	*Construction Noise and Vibration* Respond to the Applicant's response contained in [REP2-021] to the issues raised in the LIR [REP1-039], [REP1-044] and [REP1-046] respectively, with regard to the impact of construction noise and vibration from the Proposed Development on receptors. List any outstanding concerns and provide recommendations for addressing them.	

Table 2-14 Public Health

Ref	Question To:	Question	Applicant's Response
PH 1.1	West Sussex CC	*Potential Damage to Utilities* Respond on the provisions made by the Applicant with respect to action to be taken in the event of damage to utilities in the emergency planning section of the OCoCP [PEPD-033].	
PH 1.2	The Applicant	*Onshore Substation* The ExA notes the potential for Work No 16 (onshore substation) to be GIS. Explain whether there are any proposals to SF6 gas. If so, explain how it would be controlled to avoid a risk to public health or damaging the environment.	The onshore substation is expected to include gas insulated switchgear (GIS). Sulphur Hexafluoride (SF_6) is the most commonly used gas for this function at present, though there are legislative and industry moves to replace this insulant. The Applicant is keen to use alternatives when these are commercially available and will comply with up-to-date legislation when designing and procuring this element. However, until alternatives to SF_6 are viable, this insulant must be considered as the worst-case scenario for environmental assessment. F-gases, including SF_6 are a highly regulated substance with stringent regulations and control measures in place. Equipment and associated activities are required to be reported to the Environment Agency on an annual basis. The Environment Agency has the power to impose enforcements and sanctions to ensure that the risk to public health and the environment is controlled. Regulations and restrictions on the use and volumes of SF_6 are constantly improving and there is specific guidance issued by the Environment Agency for operating or servicing high voltage switchgear containing SF_6 which the Applicant will be required to comply with. This includes mandated specific SF_6-qualifications for personnel to maintain, install or decommission SF_6 equipment or recover SF_6 gases from apparatus. The guidance also prescribes minimum intervals for inspection of SF_6 apparatus.

Table 2-15 Seascape, Landscape and Visual

Ref	Question To:	Question	Applicant's Response
SLV 1.1	The Applicant SDNPA	*Viewpoints* Points 12 to 14 of its PADS submission [AS-006], SDNPA state that Kinetic Testing of viewpoints should be used at SDNP area. Having regard to the Applicant's mid examination progress tracker [REP2-013], comment upon the correct approach and confirm the policy/guidance justification for such an approach.	The Applicant notes that the Examining Authority Written Question **SLV1.1** is focused on Kinetic Testing (PADS SDA14) however the Applicant has also provided a response to PADS SDA12 (selection of viewpoints in relation to the assessment of landscape character, including tranquillity) and SDA13 (micro-siting and agreement of viewpoints) in the response below. A request for '*kinetic viewpoints'* was first made from South Downs National Park (SDNP) in response to the Applicant's request to confirm viewpoint locations in 2020. Further consultation with SDNP in late 2020 resulted in a Technical Note from the Applicant (dated December 2020) which responded to a number of questions related to the landscape and visual impact assessment (LVIA) Study Area and viewpoint selection. The Applicant confirmed sequential viewpoints would be considered as part of the Landscape and Visual Impact Assessment (LVIA). Ten sequential views were subsequently agreed with stakeholders, including the SDNP along the route of the South Downs Way National Trail and illustrated to support the assessment (Figure 18.76 in **Chapter 18: Landscape and visual impact – Figures (Part 6 of 6), Volume 3** of the Environmental Statement (ES) **[APP-103]**). This included the following viewpoints: 1. Viewpoint I: Chanctonbury Hill - illustrated in Figure 18.49 in **Chapter 18: Landscape and visual impact – Figures (Part 5 of 6), Volume 3** of the ES **[APP-102]**); 2. Viewpoint Ia: Chanctonbury Ring / Hill; 3. Viewpoint H7h: Barnsfarm Hill - illustrated in Figure 18.48 in **Chapter 18: Landscape and visual impact – Figures (Part 4 of 6), Volume 3** of the ES **[APP-101]**); 4. Viewpoint G2: Barnfarm Hill; 5. Viewpoint LD2: Sullington Hill / PRoW 2092, east of Chantry Post -illustrated in Figure 18.67 in **Chapter 18: Landscape and visual impact – Figures (Part 6 of 6), Volume 3** of the ES **[APP-103]**). SDNP requested this be micro-sited (GR 509036, 111857) and this was undertaken as per the illustrated figure; 6. Viewpoint LD3: omitted by the Applicant in preference of viewpoints H7g and H7h – both confirmed by SDNP; 7. Viewpoint G: Chantry Hill –This was undertaken as per the illustrated figure for Viewpoints LD2 and G2 above. (Also illustrated in Figure 18.30 in **Chapter 18: Landscape and visual impact – Figures (Part 3 of 6), Volume 3** of the ES **[APP-100]**); 8. Viewpoint G3: Springhead Hill; 9. Viewpoint G4: Rackham Hill; and 10. Viewpoint G5: Amberly Mount. The Applicant will add these viewpoints (where not shown) to a plan shown in Figure 18.4b in **Chapter 18: Landscape and visual impact – Figures (Part 1 of 6), Volume 3** **[APP-098]** or equivalent by Deadline 4. A series of sequential viewpoints along the South Downs Way were therefore confirmed with SDNP and these viewpoints were used to illustrate the assessment reported in **Appendix 18.4: Visual assessment, Volume 4** of the ES **[APP-170]**). The assessment of the South Downs Way was supported by site survey (walking the National Trail) and use of a 3D model of the onshore cable corridor and Digital Terrain Model (DTM) which has been used to explore viewpoints from any location and / or regular intervals to inform the assessment. Examples of the output from the 3D model were shared with SDNP at a recent Expert-to-Expert meeting held on 28 March 2024.

Ref	Question To:	Question	Applicant's Response
			The 'sequential viewpoint' assessment approach is commonly used in LVIA and supported by the Landscape Institute and Institute of Environmental Management and Assessment (IEMA), (2013). *Guidelines for Landscape and Visual Impact Assessment. Third Edition* (GLVIA3), paragraph 6.22. '*Kinetic viewpoints'* and their use in LVIA is not referred to in GLVIA3. The Applicant is not aware of any policy / guidance promoting their use. SDNP provided an example of 'kinetic viewpoints' in their Statement of Common Ground, reference SDA 32 (example document: Shoreham Airport application reference AWDM/1093/17 LVIA additional information). The kinetic viewpoints present as multiple views from regular and relatively short distances along a route. They are illustrated as small squares (approximately 9cm²) not suitable for the linear form of the onshore cable corridor which extends across a wider field of view. This has been fed back to SDNPA in an Expert-to-Expert meeting held on 25 January 2024. Whilst it is always possible to provide more information, the Applicant considers that the provision of the sequential viewpoints is proportionate and appropriate, submitted in **Appendix 18.4: Visual assessment, Volume 4** of the ES **[APP-170]**). The assessment of the South Downs Way and related LVIA fully accounts for the sequential / continuous experience of views and perceptual qualities experienced by people moving along PRoW and the South Downs Way as well as their ability to view in multiple directions. The LVIA reports on the level and nature of effect as well as the geographical extent or length of route affected during the construction phase. Therefore the Applicant does not agree that kinetic viewpoints are needed or that the LVIA presented in **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** needs amendment. In response to the SDNPA's PADS submission **[AS-006]** SDA-12: *"It is not clear how views have been selected and assessed in respect of the effect on landscape character, including tranquillity."* The Applicant has undertaken further Expert-to-Expert Meetings (28 March 2024), explaining that the effects on landscape character and perceptual qualities such as tranquillity have not been assessed in relation to specific viewpoints. Rather these have been assessed 'on site' by spending time in the landscape and travelling through the landscape, walking footpaths and visiting locations such as Open Access Land. Although the landscape assessment makes reference to the viewpoint visualisations as illustrative material, the LVIA draws from a more holistic experience of the landscape and reference to baseline material describing these qualities such as landscape character assessments for example. In response to SDNPA's PADS submission **[AS-006]** SDA-13: *"At the Third Statutory Consultation Exercise (Further Supplementary Information Report – 2023) the SDNPA advised micro-siting of viewpoints be undertaken in consultation with Stakeholders. This has not taken place and viewpoint locations have not been agreed*." The Applicant has undertaken further Expert-to-Expert Meetings (15 February 2024), explaining that the viewpoints were micro-sited, re-photographed, re-numbered and then illustrated in the ES with the process outlined within **Appendix 18.6: Viewpoint directory, Volume 4** of the ES **[APP-172]**. The Applicant will provide a further update to **Appendix 18.6: Viewpoint directory, Volume 4** of the ES **[APP-172]**, explaining in more detail how amended viewpoints have been re-numbered. In response to the feedback received from consultees including the discussions at the Expert-to-Expert meetings the Applicant will be providing a small number of additional requested viewpoints / wirelines from the 3D computer model by Deadline 4.

Ref	Question To:	Question	Applicant's Response
SLV 1.2	Natural England	*National Landscapes* The Applicant states at table 4.14 applicants' response to Natural England – Appendix I (Seascape, Landscape and Visual Impact) in response to Ref I1 [REP1-017] that the Proposed Development will result in not significant effects on views or special qualities of the Isle of Wight Area of Outstanding Natural Beauty (IoWAONB) (paragraphs 15.15.50 to 15.15.53 ES Chapter 15) [APP-056] and that the IoWAONB agrees with these findings (table 15.7 ES Chapter 15) [APP-056] . Explain why NE holds a different view to the Applicant and the said parties.	
SLV 1.3	Natural England	*Lateral Spread and Proximity of WTG's* In the context of the Applicant's Seascape, Landscape and Visual Impact Assessment (SLVIA) Maximum Design Scenario and Visual Design Principles clarification note [REP1- 037], comment upon the Applicants assertions at table 4.14 Applicants response to Natural England – Appendix I (Seascape, Landscape and Visual Impact) in response to Ref I6 [REP1-017], that: • There is a distinct gap between R1 and the Proposed Development. • That the Proposed Development will form a clearly separate array grouping that has a narrower lateral spread in field of view than R1. • The south of R1 is the optimal location within Zone 6. • The additional 7 degrees over and above R1 is a relatively small lateral spread. • The WTG's will be experienced within a remote context setting beyond intervening non designated and urbanised coastal strip between the open downs and the sea. (Natural England	

Ref	Question To:	Question	Applicant's Response
		may wish to combine with D3 response to this document).	
SLV 1.4	Natural England SDNPA	*Rampion One Offshore Wind Farm - Baseline* Justify the position on how Rampion One Offshore Wind Farm (R1) should not form part of the baseline assessment. The position is contrary to the Applicant's assessment in the ES [APP-056] in which R1 does form part of the baseline. The Applicant further cites accordance of its approach with paragraph 7.13 of the Guidance for Landscape and Visual Impact Assessments and the Planning Inspectorate's (PINS) Advice Note 17.	
SLV 1.5	The Applicant Natural England SDNPA	*Statutory Purposes of National Park* Given the Applicant's conclusions on harm to statutory purposes at table 4.14 Applicant's response to Natural England – Appendix I (Seascape, Landscape and Visual Impact) in response to Ref I1 [REP1-017]; to paragraph 3 of Natural England's response to ExA Questions Appendix N2-Annex 1 Deadline 2 Submission [REP-039], and to the SDNPA's LIR [REP1-049, explain what is the correct approach in concluding on the impact upon special qualities and whether the statutory purposes of the designation are compromised.	With respect to special qualities, the Applicant refers to the submission at Deadline 1 of the post hearing submission **Deadline 1 Submission – 8.25.5 Applicant's Post Hearing Submission – Issue Specific Hearing 1: Appendix 5 – Further information on Action Point 27 – South Downs National Park [REP1-024]**, together with the assessments of South Downs National Park (SDNP) special qualities undertaken in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the Environmental Statement (ES) **[APP-056]**, **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** and **Appendix 18.3: Landscape assessment, Volume 4** of the ES **[APP-169]**. The Applicant notes that there is currently no published best practice guidance for assessing the effects of development on the special qualities of National Landscapes in England and Wales (although it understands that this is something Natural England is looking to undertake as part of the offshore wind best practice advice series). NatureScot is developing guidance on how to assess landscape effects on Special Qualities of designated landscapes in Scotland and published a working draft in 2018 (NatureScot, November 2018, *Working Draft 11 – Guidance for Assessing the Effects of Special Landscape Qualities*). The assessments undertaken in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**, **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** and **Appendix 18.3: Landscape assessment, Volume 4** of the ES **[APP-169]** follow *Guidance for Landscape and Visual Impact Assessment* (GLVIA3) (Landscape Institute/Institute of Environmental Management and Assessment, 2013) and draw on aspects of the draft NatureScot guidance (NatureScot, 2018). The assessments undertaken take a staged approach of describing the SDNP special qualities (defined in '*South Downs National Park Special Qualities*' (South Downs National Park Authority (SDNPA), 2015)), selecting relevant special qualities, assessing special qualities in terms of their sensitivity and magnitude of change (supported by zone of theoretical visibility (ZTV), viewpoint analysis and site survey), and providing an assessment of significance, including the implications for the integrity of the designation. The Applicant's response to Action Point 27 in **Deadline 1 Submission – 8.25.5 Applicant's Post Hearing Submission – Issue Specific Hearing 1: Appendix 5 – Further information on Action Point 27 – South Downs National Park [REP1-024]** sets out where and how the Development Consent Order (DCO) Application includes information in relation to the effects of the Proposed Development on the special qualities of the SDNP. It does so in the context of the relevant policy tests as set out in National Policy Statement (NPS) EN-1 (Department of Energy and Climate Change (DECC), 2011a) and the revised NPS EN-1 (Department for Energy and Net Zero (DESNZ), 2023a).

Ref	Question To:	Question	Applicant's Response

It is the Applicant's position that, while there is harm to SQ1 "*Diverse, inspirational landscapes and breathtaking views*" (during construction and operation) and SQ3 "*Tranquil and unspoilt places*" (during construction), the statutory purpose of the SDNP would not be compromised and reasons for its designation will not be undermined by the Proposed Development. Therefore, the Proposed Development accords with the requirements of the legal tests and the policy tests set out in the NPS in relation to the SDNP.

NPS EN-1 (DECC, 2011a) states that it may be helpful for applicants to draw attention to any examples of existing permitted infrastructure they are aware of with a similar magnitude of impact on sensitive receptors. In this regard, the Applicant draws the Examining Authority's attention to **Appendix F SLV: Examples of Permitted NSIPs affecting special qualities and statutory purpose of national landscapes** (of this document), containing examples of recently permitted Nationally Significant Infrastructure Projects (NSIPs) affecting special qualities and statutory purpose of national landscapes. These are summarised as follows:

- East Anglia TWO Offshore Wind Farm – for which the Examining Authority and Secretary of State found there to be significant harm to the special qualities of the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB) yet concluded this would not compromise the purposes of the designation;
- Awel y Môr Offshore Wind Farm – for which the Examining Authority considered that the Applicant aimed to avoid, as far as possible, compromising the purposes of the Isle of Anglesey AONB designation and had regard to sensitive design. Despite these aims to do so, the Examining Authority found that substantial harms occurred that failed to conserve or enhance the natural beauty of the Isle of Anglesey AONB designation (in conflict with statutory purpose), yet the Examining Authority recommended development consent was granted as the substantial benefits would outweigh its adverse effects;
- Sizewell C Nuclear Power Station – for which the Examining Authority and Secretary of State found significant adverse effects across the Suffolk Coast and Heaths AONB, with adverse effects on the purpose of the designation and harm to its special qualities, yet was content that the wider functioning of the AONB would not be fundamentally impacted, that the overall purpose of designation would not be compromised and the AONB would continue to perform its statutory purpose; and
- Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Project – the Examining Authority concluded that while the impact on the Norfolk Coast AoNB should be assessed as having moderate significance and medium magnitude, there was no evidence which demonstrates that the impact of the Proposed Development would be so significant as to change the assessment status of QNB 2, 3 and 6 to indicate that these qualities are no longer being conserved and enhanced. With regard to seascape and visual effects, the Secretary of State ascribed this matter minor negative weight in the planning balance, noting the Applicant had had regard to the purposes of nationally designated areas and had taken reasonable precautions to avoid compromising the purpose of the designation of the Norfolk Coast AoNB, in according with NPS EN1 Section 4.2 and para 5.9.12 (DECC, 2011a).

The Applicant considers that these are a useful benchmark for informing the correct approach to concluding the effect upon special qualities and whether the statutory purposes of the designation are compromised.

Whilst not a defined term applied in England in relation to National Parks, the Applicant suggests that considering the effect on 'overall integrity' is nonetheless a very clear way of expressing how the special qualities of a designated landscape come together to represent the whole or overall value. It is a useful approach to adopt when considering the degree of harm overall and how this might compromise the statutory purposes and duty for National Parks especially where there is a defined set of identifying Special Qualities.

Whilst some harm would be caused to 'breathtaking views' and 'stunning, panoramic views to the sea', defined in Special Quality 1, it is the conclusion of **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** and the position of the Applicant, that this would not compromise overall integrity and purpose of

Ref	Question To:	Question	Applicant's Response
			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. The interest in the SDNP is intrinsic to itself and would not be harmed to such as degree that it would be compromised by the Proposed Development. In respect of **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** the position of the Applicant is that there would be significant effect on Special Qualities 1 "*Diverse, inspirational landscapes and breathtaking views"* and 3 *"Tranquil and unspoilt places*". In respect of Special Qualities 1 and 3 the effects would be of limited duration / temporary, largely reversable and mostly limited to the construction phase. During the operation and maintenance phase, significant effects in respect of Special Quality 1 will be of limited duration due to the replacement of specific landscape elements (mainly trees and hedges) and their growth and establishment (during Years 1-5) which will progressively reduce significant effects to non-significant levels. Consequently, the short duration, temporary and reversable nature of these effects will ensure that the integrity of the SDNP will not be adversely or significantly affected. It is concluded that the SDNP designation and statutory purpose would not be compromised as a result of the onshore cable route. The Applicant considers that for the statutory purpose of the SDNP to be compromised, it would be necessary to conclude that the significant adverse effects across a number of special qualities were fundamental to the purposes for designation and affected to such a degree that the identified significant adverse effects compromised those purposes and its overall integrity. The Applicant considers that while there are significant adverse effects (as determined in EIA terms) these do not translate into undermining the statutory purpose of the SDNP. The Applicant has aimed to avoid, compromising the purposes of designation and has had regard to sensitive design taking into account various siting, operational, and other relevant constraints. Consequently, the Proposed Development includes a range of associated mitigation as set out in the **Commitments Register** **[REP1-015]** (updated at Deadline 3). The Applicant accepts that there would be some perceived diminishment (harmful effects) of one of the seven special qualities and the natural beauty of the SDNP associated with the 'panoramic views of the sea' experienced from the South Downs Way and the chalk cliffs at Seven Sisters (part of Special Quality 1), however, panoramic views of the sea would still be retained, other 'view types' would remain unaffected (such as views from the scarp looking north) and substantial areas of the SDNP have no visibility of the offshore elements of the Proposed Development and would not be affected significantly (as shown in the ZTV in Figure 15.20 in **Chapter 15: Seascape, landscape and visual impact assessment – Figures (Part 4 of 8), Volume 3** of the ES **[APP-089]**). There are also 7 special qualities and it is the combination of these that define its sense of place – all but one (Special Quality 1) of the 7 special qualities (Special Quality 2 – Special Quality 7) would either be unaffected or subject to not significant effects as a result of the offshore elements of the Proposed Development. Taking into account these factors, the effects are not considered to occur to such a degree that it would affect the integrity of the SDNP or its inherent natural beauty, changes would occur incrementally within the context of an existing offshore wind farm development (Rampion 1) located outside but in the setting of the SDNP, often beyond the intervening urban developed landscape and in the understanding of the need for an environment shaped by embracing new enterprise and increasing opportunities for producing alternative energy, as recognised in Special Quality 4.
SLV 1.6	The Applicant	*Seascape – Design Principles* In its Mid-examination Progress Tracker submitted at Deadline 2 [REP2-013], together with its responses to West Sussex CC [REP2-020], SDNPA [REP2-024] and Natural England [REP2-026] in which the Applicant responds on	Designing the layout of the proposed offshore wind farm in the most optimal way involves balancing a number of competing technical, economic, functional and environmental factors. As detailed in the Development Consent Order (DCO), offshore construction work cannot begin until the locations of the proposed wind turbines have been submitted to and approved in writing by the Marine Management Organisation (MMO), in consultation with (where relevant) Trinity House and the Maritime and Coastguard Agency (MCA).

Ref	Question To:	Question	Applicant's Response
		reducing the visual effects through further design principles, explain further what is meant by "**these opportunities are limited by the technical, economic and functional requirements of the Proposed Development to produce renewable energy, as well as other environmental factors**"	Trinity House and the MCA will be principally looking at the proposed wind turbine layout in respect of: • Navigational safety; and • The means to enter the array area for search and rescue operations. In general terms they are looking for a layout which avoids outlying turbine positions and provides grouping to enable a clear boundary for the array to be defined and hence enable general marine to more easily navigate around the wind farm. In addition to this, at least one axis of the layout will be required to serve as search and rescue lanes to enable emergency services to be able to quickly navigate through the wind farm in the event of an incident. As set out in the application, no infrastructure will be located with the Archaeological Exclusion Zones (AEZ) detailed with the Environmental Statement. Combining the likely requirements of Trinity House and the MCA with the locations of the AEZs, will naturally limit the layout approach that can practically be used. From both a technical and economical point of view, the spacing of wind turbines is a key consideration. Wind turbine generators need to be spaced sufficiently from each other so that energy can be captured whilst minimising wake losses. However, they cannot be placed too far apart from each other as this will increase the per capital cost of the array cables and transmission system used to connect the project to the grid. Other technical parameters which will impact on the decision making as to where turbines could be located include consideration of soil conditions, the full data for which will be collected after the consent process. Soil conditions may limit where it is economically efficient to locate turbines. The scale of the wind farm will be the ultimate determining factor as to whether it will be considered viable and subsequently constructed. This application has been designed with a generation capacity of approximately 1,200MW in mind and details a 400kV connection and an associated transmission design to reflect this large generation capacity. This includes a new onshore substation and relatively long export cables. Therefore, the DCO Application allows for required flexibility on the final design, as the scale of the wind farm will need to be sufficiently large be able to pay for the use of the transmission assets used to connect it as well as maximising energy generating potential in response to UK Government policy. Nevertheless, visual design mitigation has been incorporated within the reduction in the spatial extent of the proposed DCO Order Limits (array area) and windfarm separation zones, embedded within the **Offshore Works Plans [PEPD-004]**.
SLV 1.7	The Applicant	*Special Quality 3* Comment upon Natural England's assertions at table 1 in response to ExA Q6.1 [REP2-039] in relation to the impact of Special Quality 3 that for the coastal parts and the Sussex Heritage Coast the assessment of significance will be significant (major) rather than not significant (moderate) Section 15.15 ES chapter 15 Seascape [APP-056].	The Applicant refers to the submission at Deadline 1 of the post hearing submission **Deadline 1 Submission – 8.25.5 Applicant's Post Hearing Submission – Issue Specific Hearing 1: Appendix 5 – Further information on Action Point 27 – South Downs National Park [REP1-024]**, which provides further assessment of the Offshore elements of the Proposed Development on Special Quality 3 '*Tranquil and unspoilt places*'. Areas of relative tranquillity within the South Downs National Park (SDNP) are mapped in Appendix 1 of the SDNP Tranquillity Study (South Downs National Park Authority (SDNPA), 2017). It is noted that the tranquillity score for the coastal parts of the Sussex Heritage Coast is not generally within the range of the highest tranquillity scores and is generally in the medium to medium-high range. There are positive tranquillity factors relating to the natural landscape, wide open spaces, extensive views to the sea and perceived wildness/remoteness, however there is also an absence of other factors that people relate to tranquillity as there are few trees/nature woodland in the chalk downland landscape or

Ref	Question To:	Question	Applicant's Response
			streams, river and lakes (Appendix 2, SDNPA, 2017) and at times there are many people and cars present at key sites (Birling Gap, Beachy Head, Cuckmere Haven) and walking routes (South Downs Way). The offshore wind turbine generators (WTGs) of Rampion 2 will introduce some changes to the tranquillity experienced in sea views, as an array of additional built/modern elements, which interrupt and define a further presence in the aspect out to sea through the apparent height, spread and movement of the WTGs rotor blades. The visual movement of the rotor blades incorporates a kinetic element, however it is an already dynamic seascape and the relatively slow visual movement of the WTG rotors and WTG scale at long distance limits the potential changes in perceived tranquillity. The Applicant considers that the additional presence of further WTGs with slow and consistent visual movement, at such distance outside the Heritage Coast, would not introduce a material sense of unrest, nor disturb the calmness and quietude experienced. On balance, it is considered that the effects on relative tranquillity of the coastal parts of the Sussex Heritage Coast are therefore **moderate** and **not significant**. A sense of tranquillity will remain, as the array area would not override the existing naturalistic elements in the landscape, nor its open space and extensive sea views will remain beyond the relatively narrow field of view affected by the Rampion 2 WTGs. The 'feeling of peace and space' referred to in this special quality will also be retained and it is considered that people will continue to experience tranquillity as part of their experience of the Sussex Heritage Coast.
SLV 1.8	The Applicant	*National Landscapes* Comment upon Natural England's Response to ExA Q6.3 [REP2-040] that the ExA does not have information on whether: a) The Design Principles have been applied to the consideration of effects on the Chichester Harbour Area of Outstanding Natural Beauty (CHAONB) /National Landscape and Isle of Wight Area of Outstanding Beauty (IoWAONB) /National Landscape.	The Applicant notes that there has been a reduction in the spatial extent of the proposed DCO Order Limits (array area), which is embedded within the Proposed Development through the proposed Order Limits and Works Areas shown on the **Offshore Works Plans** **[PEPD-004]** and Works Area Descriptions provided in full in Schedule 1 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). The Applicant notes a reduction in the western extent of the proposed DCO Order Limits, compared to the Preliminary Environmental Information Report (PEIR) Assessment Boundary, illustrated in Figure 3.3 in **Chapter 3: Alternatives – Figures, Volume 3** of the Environmental Statement (ES) **[APP-075]**. This resulted in some reduction in the western lateral spread of wind turbine generators (WTGs) in views from the Chichester Harbour Area of Outstanding Natural Beauty (CHAONB) and an increase in the distance of the proposed DCO Order Limits from the Isle of Wight Area of Outstanding Beauty (IoW AONB) of approximately 2km. In regards to the IoW AONB, the Applicant would comment that the offshore array area is viewed at its narrowest and at long range from the IoW AONB (over 31 km from its closest point and 34km from Bembridge Down/Culver Cliff), and it was assessed that effects were unlikely to be significant and this was agreed with the Isle of Wight Council (as noted in Table 15.7 in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**). Further design mitigation was therefore not considered to be necessary with regards to the IoW AONB given the not significant effects arising. In regards to the CHAONB, 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 not significant effects on the character of the harbour basin area at the core of the CHAONB and the majority of its special qualities. Further design mitigation in respect of the CHAONB was therefore not considered to be needed beyond the measures incorporated within the reduction in the spatial extent of the proposed DCO Order Limits (array area) embedded within the **Offshore Works Plans** **[PEPD-004]**. There is very limited visibility of Rampion 2 from the CHAONB when surface feature screening is factored in, as seen in the Zone of Theoretical Visibility (ZTV) in Figure 15.15 of **Chapter 15: Seascape, landscape and visual impact assessment – Figures (Part 1 of 8), Volume 3** of the ES **[APP-088]**. The CHAONB is very low lying and the intervening coastal plain landform, buildings and vegetation and orientation provide screening from the waters and estuaries, which are not affected. This can be seen in viewpoints within the CHAONB from which there is no effect as the

Ref	Question To:	Question	Applicant's Response
			Rampion 2 WTGS will not be visible, including Viewpoint B(i) Chichester Marine (Figure 15.74 of **Chapter 15: Seascape, landscape and visual impact assessment – Figures (Part 8 of 8), Volume 3** of the ES **[APP-095]**) and Viewpoint B(ii) Dell Quay (Figure 15.75 of **Chapter 15: Seascape, landscape and visual impact assessment – Figures (Part 8 of 8), Volume 3** of the ES **[APP-095]**). The assessment in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]** finds that there is a very localised significant effect on the perceived *'unique blend of land and sea'* (referred to in Special Quality 1) and *'significance of…. Distant landmarks across land and water'* (referred to in Special Quality 3), as experienced from a very limited area of the coastal edges/open seascape at the mouth to Chichester Harbour. Viewpoint 22 Eastoke Point (Figure 15.47 of **Chapter 15: Seascape, landscape and visual impact assessment – Figures (Part 8 of 8), Volume 3** of the ES **[APP-095]**) provides a representative viewpoint on the coastal edge of the CHAONB from which these effects may be observed. These effects are however geographically contained to the open waters at the mouth of the harbour (Landscape Character Area (LCA) A1) and adjacent coastline at Eastoke Point and are not experienced from the wider areas of the CHAONB, including the open waters of the Chichester Harbour Central Basin (B1), where the magnitude of change is assessed as negligible and Not Significant (minor), due to the very limited theoretical visibility of the Rampion 2, the low-lying landscapes, wooded shorelines and the degree of intervening screening by vegetation and development on the Manhood Peninsula. No significant effects were assessed on all other special qualities (SQs) of the CHAONB, including: • SQ1 - its combination of expanses of open waters, narrow inlets and intimate creeks; • SQ2 - the frequently wooded shoreline; • SQ3 - the flatness of the landform and significance of the sea and tide; • SQ4 - the open water of the central area of the Harbour; • SQ5 - the overall sense of wilderness within the landscape; • SQ6 - the strong historic environment and heritage assets; • SQ7 - the picturesque harbourside settlements; • SQ8 - the unspoilt character and unobtrusive beauty; and • SQ9 - sense of peace and tranquillity.
		b) Navigation and aviation lighting will result in significant effects on IoW AONB/National Landscape Special Quality 5 which includes 'dark starlit skies'.	The Applicant considers that aviation and navigation night-time lighting of the offshore elements of the Proposed Development will not result in significant effects on the Isle of Wight Area of Outstanding Beauty (IoW AONB) Special Quality 5, which includes 'dark starlit skies'. The assessment in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the Environmental Statement (ES) **[APP-056]** (Table 15-42) finds that the operational effects of the lighting of the offshore elements of the Proposed Development will result in a medium-low to low magnitude of change and not significant effects on the 'dark starlit skies' special quality of the IoW AONB. In views from both the IoW AONB, the aviation lights will be visible low to the horizon and do not extend high into the sky, thus limiting the amount of the night-sky that is impeded and having limited influence on the view of stars in the night-sky. The lighting of the Proposed Development will not affect people's ability to see a clear starry sky in night-time views from the IoW AONB and will also not reduce the observed quality of easily visible astronomical features. The Rampion 2 aviation lights will generally be viewed in the context of brighter lights and skyglow of urban areas along the coast, that forms an existing light Influenced section of views. The aviation lights are considered unlikely to result in 'obtrusive' light, nor will they impede the expanse of night sky to the point of being obtrusive. Generally, this is because the aviation lights will be viewed relatively near the horizon, or even below the skyline from elevated parts of the IoW AONB, so while they may have effects by breaking into the darkness as point features of light, appearing visible in the seascape, they are not expected to result in obtrusive light that would harm the enjoyment of the 'dark starlit skies'.

Ref	Question To:	Question	Applicant's Response
			Fundamentally, the views at night from the IoW AONB will remain dark and starlit (in clear atmospheric condition) regardless of the presence of the lighting of the Proposed Development. The Applicant recognises that no night-time photomontage views from the IoW AONB were included in **Chapter 15: Seascape, landscape and visual impact assessment, Volume 2** of the ES **[APP-056]**, however assessments were informed by those from other viewpoints at similar range in the Study Area, benchmarking against professional judgements on the effects of wind turbine generator (WTG) lighting at night and the visibility of Rampion 1 WTG lighting at night over similar distances (over 30km). Although the Rampion 2 WTG lighting is likely to be visible at night from the closest parts of the IoW AONB (in very good/excellent visibility), they are likely to be discernible only as faint point features of light with low intensity, arranged in an array low to the sea horizon and viewers are unlikely to perceive the aviation or marine navigation lights to any degree of intensity at such long range. The Applicant also notes commitment C-266 (in the **Commitments Register** **[REP1-015]** (updated at Deadline 3)) that, during operation, and where visibility conditions permit, the intensity of aviation warning lights will be reduced to no less than 200 candela (cd), subject to the availability of a commercial system. This is secured by Condition 8 Schedule 11 and 12 of the Deemed Marine Licence in the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). The Applicant draws attention to East Anglia TWO offshore wind farm as an example of permitted infrastructure with a similar magnitude of impact on night-time views from a National Landscape. The East Anglia TWO offshore wind farm project is located approximately 32km from the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (SCHAONB) at its closest point (comparable to IoW AONB which is over 31 km from its closest point). The Applicant notes the Development Consent Order (DCO) for East Anglia TWO was amended to state that required aviation lighting would be operated at the lowest permissible lighting intensity, meaning that nacelle lighting intensity would be reduced from 2000cd to 200cd where the horizontal meteorological visibility in all directions from every turbine in the group is more than 5km. This was welcomed by Natural England during the Examination and it was confirmed that Natural England had no objections to the night-time effects of East Anglia TWO and that night-time lighting would have no effect on the statutory purposes of the SCHAONB. The Applicant has made a similar commitment in C-266 (in the **Commitments Register** **[REP1-015]** (updated at Deadline 3) secured by Part 2, Condition 8 (5) Schedules 11 & 12 of the **Draft Development Consent Order** **[REP1-002]**) (updated at Deadline 3) and believes that this reduction in lighting intensity, where visibility conditions permit, would avoid significant effects on views at night from the IoW AONB Special Quality 5, which includes 'dark starlit skies'.
SLV 1.9	The Applicant	*Dark Skies* Comment upon the conclusion of the applicant on Dark Skies in response to the submission from SDNPA paragraph 6.22 [REP2-024] and paragraph 18.11.18 of ES Chapter 18 Landscape and Visual Impact [APP-059] which states that the Proposed Development will not affect the South Downs International Dark Sky Reserve or Dark Skies within the SDNP.	The Applicant notes that although the Examining Authority's Written Question **SLV1.9** is directed to the Applicant the question appears to be asking another party to provide a response to the Applicant's conclusion on Dark Skies. However, the Applicant has provided a response to the question as outlined below. The Applicant is not aware of any other examples of night-time lighting assessment undertaken for construction lighting along cable corridors / temporary trenchless crossing compounds. Nonetheless, the effects of artificial 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]**. This point was discussed further and acknowledged by South Downs National Park Authority (SDNPA) at the Expert-to-Expert Meeting (dated 28 March 2024). The Applicant will amend paragraph 18.11.88 of **Chapter 18: Landscape and visual impact, Volume 2** of the ES **[APP-059]** to confirm that there would be no effect on the core area of the South Downs International Dark Sky Reserve within the South Downs National Park (SDNP) at the Deadline 4 submission. This is because the core area of the South Downs International Dark Sky Reserve and all of the Dark Skies Discovery Sites are located beyond 10km distance from

Ref	Question To:	Question	Applicant's Response
			the proposed DCO Order Limits (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]**). However, high level viewpoint assessment indicates that effects from construction lighting on residents and recreation users within the SDNP cannot be ruled out. The nature of these effects would be of short duration and restricted by working hours, location, and changes between the summer and winter solstices. Therefore, the focus has been on mitigation for the construction lighting as advised by the South Downs National Park Policy SD8: Dark Night Skies and TAN Dark Skies, 2021. Policy SD8 has been incorporated into commitment C-200 to control artificial lighting during construction, provided in the **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3) secured by Requirement 22 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3). The implementation of commitment C-200 will minimise the effects of any night-time construction lighting across all of the onshore works areas within the South Downs National Park, including the temporary construction compound at Washington. The detail of any lighting design for all temporary artificial lighting will be developed once contractors are appointed and it is noted that no permanent lighting will be required in the SDNP. 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. These measures are provided in the **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3), Section 4.5, and further information on the design will be provided via the stage specific CoCPs to be submitted pursuant to Requirement 22 of Part 3, Schedule 1 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3). In addition, the Applicant will also incorporate / will consider how TAN Dark Skies, 2021 could be added to the Outline CoCP for Deadline 4. This point was discussed further and welcomed by SDNP at the Expert-to-Expert Meeting (dated 28 March 2024).
SLV 1.10	West Sussex County Council	*Nighttime Viewpoint Assessments* Given the Applicant's Mid-examination Progress Tracker [REP2-013], in the context of the original assessment at Appendix 15.5 Volume 4 of the ES (APP-161) supplemented by night-time viewpoint assessment (PEPD-024), confirm whether night-time viewpoint assessments are now sufficient to enable an appropriate consideration of the environmental effects.	

Table 2-16 Soils and Agriculture

Ref	Question To:	Question	Applicant's Response
SA 1.1	The Applicant	*Materials Management Plan* Chapter 20: Soils and Agriculture [APP-061] frequently refers to an Outline Materials Management Plan. The ExA requests that an Outline Materials Management Plan is submitted into the Examination at Deadline 3.	Reference to an Outline Materials Management Plan (MMP) in the embedded measures in Table 20-17 and paragraph 20.9.14 in **Chapter 20: Soils and agriculture, Volume 2** of the Environmental Statement (ES) **[APP-061]** is erroneous, and this has been added to the errata list. No Outline Materials Management Plan will be produced for the Proposed Development as the Applicant is committed to developing stage specific MMP(s) in accordance with the Definition of Waste Code of Practice (DoWCoP). The MMP(s) cannot be produced until the pre-construction phase when the appointed Contractor is in place and sufficient detailed design information is available, as the MMP must provide evidence of material being suitable for reuse, demonstrate certainty of use and confirm the quantities of material being excavated, stored and reused. The MMP(s) for Rampion 2 will be a formal document, completed in accordance with the existing MMP template hosted on the CL:AIRE (Contaminated Land: Applications in Real Environments) website. The stage specific MMP(s) will be subject to a CL:AIRE Declaration by a Qualified Person. The MMP(s) will reference the stage-specific Soil Management Plan(s) and will include a Soil Resources Plan. Further details of measures to protect and promote reuse of clean soils excavated for Rampion 2 are provided below, including an update to the **Outline Soils Management Plan [APP-226]** (updated at Deadline 3). Development of an MMP is committed to by the Applicant in commitment C-69 outlined in **Chapter 20: Soils and agriculture, Volume 2** of the Environmental Statement (ES) **[APP-061]** and the **Commitments Register [REP1-015]** (updated at Deadline 3) secured through the **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3) via Requirement 22 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3). The MMP will ensure that groundworks during construction are undertaken in compliance with the DoWCoP for excavated materials. Use of an MMP in this way will help to optimise the reuse of excavated soils from the onshore cable construction corridor, as well as enabling land to be returned to its original agricultural land classification (ALC) grade. If clean soils cannot be used within the proposed DCO Order Limits, the MMP will support their successful reuse offsite, if a suitable receptor site can be identified to correspond with construction of the Proposed Development. As stated in the **Chapter 20: Soils and agriculture, Volume 2** of the ES **[APP-061]**), soils excavated at the following locations can be reinstated (on a phased basis) as the construction progresses: • The landfall temporary construction compound; • Trenchless crossing compounds; • Temporary construction compounds; • The onshore cable corridor (except for some soils potentially not being replaced at Joint Bays (JBs) / Link Boxes (LBs) / Fibre Optic Cable Joint Boxes (FOCJBs); • Onshore substation temporary works area; • The existing National Grid Bolney substation extension temporary construction compound; and • The existing National Grid Bolney substation works temporary construction access.

Ref	Question To:	Question	Applicant's Response
			To provide reassurance to stakeholders that the Applicant recognises the value of the soils that will be disturbed by the Proposed Development, the following additions have been provided in the **Outline Soils Management Plan [APP-226]** which has been updated at Deadline 3 submission: In 'Section 5: Soil handling', a new section 5.3 has been added as follows: ***'5.3 Soil Resources / Material Management Planning*** *2.1.1 The Contractor will use suitable field methods and data management systems to support the return of excavated soils, including topsoils and subsoils, to their original location, above the installed underground cables, at temporary compounds, temporary works areas, and temporary accesses, and any other areas within Rampion 2 where excavated soils can be reinstated where they came from. This will support the return of agricultural land within Rampion 2 to its original ALC grade on completion of construction.* *2.1.2 To meet the requirements of the CL:AIRE (2011) The Definition of Waste: Development Industry Code of Practice, Version 2, March 2011, MMPs must be based on a suitable tracking system, so that all materials subject to excavation, disposal, treatment and/or reuse are tracked throughout construction, and evidence generated to provide an auditable trail. Where required, and particularly when topsoils and / or subsoils will be temporarily stored away from their field of origin, measures will include:* • *Geo-referencing of excavated soils will be undertaken by the Contractor at the point of excavation to record what soil is being removed (i.e. topsoil or subsoil) and its original location;* • *Where soils cannot be stored locally, suitable global positioning systems (GPS) equipment will be used to geo-reference soils as they are excavated. The GPS equipment will be used by excavator operators or a supervisor of excavations, and relevant information transferred to dumper truck operators, other supervisors etc., as appropriate. Typically, the working area will be divided into a grid so that the excavated soils can be located to the relevant grid square within the Rampion 2 onshore cable construction corridor working area;* • *At the point of placement of a topsoil or subsoil into a stockpile for temporary storage away from its point of origin, the stockpile will also be geo-referenced and will have a unique identifier;* • *This approach means that soil stored temporarily in a stockpile will be well defined: typical information that may be assigned to stockpiles could include: whether the stockpile holds a subsoil or a topsoil, the date(s) soil was placed, soil type, soil test results such as topsoil or subsoil sample testing to BS:3882:2015 and British Standard (BS) BS:8601:2013, respectively; and* • *Stockpile management measures will also include the permitted stockpile height (i.e. the maximum stockpile height for the soil being stored, in accordance with this Outline Soil Management Plan or subsequent Stage Specific Soil Management Plans).'*
SA 1.2	Natural England	*Best and Most Versatile Agricultural Land (BMV)* Natural England raised a concern in its RR [RR-265] that Commitments should extend to returning BMV back to the same Agricultural Land Classification (ALC) grade as preconstruction. The Applicant amended Commitment C-7 in light of this concern. Confirm whether the re-draft of commitment C-7 addresses the concern.	

Ref	Question To:	Question	Applicant's Response
SA 1.3	Natural England SDNPA	*Best Most Versatile Agricultural Land and Soils* Confirm whether the responses and updates the Applicant has provided regarding soils and agriculture are adequate or whether there are any outstanding concerns regarding: a) soil surveys b) soil re-instatement c) soil stockpiles d) soil handling e) use of machinery f) the Applicant's conclusions on potential impacts of BMV agricultural land.	
SA 1.4	The Applicant	*Outline Soils Management Plan* The Applicant has stated in its response to Natural England's RR [REP1-017] that the Outline Soils Management Plan [APP-226] will be updated, particularly in reference to section 5.2. The ExA requests this is submitted at Deadline 3.	The Applicant has submitted an updated **Outline Soils Management Plan [APP-226]** at Deadline 3 in line with the Applicant's responses to Natural England's Relevant Representation within **Deadline 1 Submission – 8.24 Applicant's Responses to Relevant Representations [REP1-017]**.

Table 2-17 Traffic and Access

Ref	Question To:	Question	Applicant's Response
TA 1.1	West Sussex CC National Highways	*Traffic Assessment Methodology* Are you content with the technical note submitted by the Applicant at D2 [REP2-017] comparing the Institute of Environmental Management and Assessment (IEMA) Guidelines: 'Environmental Assessment of Traffic and Movement' (EATM 2023) and the 'Guidelines for the Environmental Assessment of Road Traffic' (GEART 1993) and the conclusions reached with respect to the assessment of the Proposed Development using EATM 2023? If not, explain your concerns including your reasoning.	
TA 1.2	West Sussex CC National Highways	*Traffic Assessment Methodology* State whether there is agreement with the methodology, baseline data and predicted traffic movements used to assess traffic and transport impacts in ES Volume 2 Chapter 23 Transport [APP-064] and ES Volume 2 Chapter 32 ES Addendum [REP1-006]. Identify outstanding issues, if any, and how they should be addressed.	
TA 1.3	The Applicant	*Abnormal Indivisible Loads (AIL)* Confirm that Shoreham Port will be utilised for AIL deliveries associated with the Proposed Development and that ES Volume 4 Appendix 23.1: Abnormal Indivisible Loads Assessment [APP-196] is still applicable.	The Applicant considers the Abnormal Indivisible Load (AIL) delivery via Shoreham Port to be a reasonable case for the purposes of assessment included in **Appendix 23.1: Abnormal Indivisible Loads Assessment, Volume 4** of the Environmental Statement (ES) **[APP-196]**. This is on the basis that Shoreham Port was used as part of the Rampion 1 project and is the closest port to the Proposed Development However, it is not possible for the Applicant to fully commit to Shoreham Port at this point, as the final specification of the electrical equipment will be undertaken during the detailed design process and in cooperation with equipment manufacturers and contractors. Port suitability in terms of lifting capacity and access restrictions along the transport route will need to be reviewed in detail once the equipment specifications are defined. For AIL deliveries, it is considered that there will not be significant impacts with regard to AIL delivery vehicle routing to the onshore substation at Oakendene. As their impact is temporary and will occur overnight or at weekends, the AIL assessment undertaken is considered to be representative of the use of alternative port locations. This is on the basis that alternative ports in proximity to the Proposed Development are well connected to the major and strategic road networks which are suitable for the transport of AILs, with the majority of constraints instead limited to the local highway network in the vicinity of the proposed DCO Order Limits. Consequently, it would be possible to use an alternative route while retaining the conclusions of **Appendix 23.1: Abnormal Indivisible Loads Assessment, Volume 4** of the ES **[APP-196]**. Regardless of the final AIL route selected, the contractor responsible for completion of AIL deliveries will be required to comply with the statutory regulations in terms of consulting with the highway authority and police prior to undertaking the works. The notification requirements and process are provided in the Road Vehicles (Authorisation of Special Types) (General) Order 2003.

Ref	Question To:	Question	Applicant's Response
TA 1.4	The Applicant	*Kent Street* The ExA notes that the Traffic Management Plan requested for Kent Street at ISH1 [EV3- 001] and to be provided at Deadline 2 is now to be provided at Deadline 3. The ExA is expecting this document to be based on actual traffic count surveys, not estimated data and that all other documents using estimated figures for this link are updated and submitted into the Examination at the same Deadline.	A traffic management strategy to facilitate access along Kent Street by construction traffic has been provided in Appendix D of the **Outline Construction Traffic Management Plan [REP1-010]** submitted at Deadline 3. The traffic management strategy for accesses A-61 and A-64 is based upon the following principles: • To facilitate access along Kent Street by construction traffic up to four passing places will be installed to provide adequate highway width for two-way traffic; • HGV entry will be controlled via the Oakendene temporary construction compound at access A-62; • HGV and LGV exit will be coordinated to ensure that they do not occur at the same time as HGVs entering Kent Street; • HGV entry and exit will be controlled by banksman along Kent Street, up to and including accesses A-61 and A-64; • General traffic will also be controlled by banksman whilst HGVs are entering or existing access A-61 or A-64; and • A temporary speed limit reduction from the current national speed limit to 40mph along the A272, between east of Cowfold to Bolney, a distance of approximately 4km. For further detail on the traffic management strategy along Kent Street refer to Sections 3 of Appendix D of the **Outline Construction Traffic Management Plan [REP1-010]** submitted at Deadline 3. Through inclusion in the **Outline Construction Traffic Management Plan [REP1-010]** (updated at Deadline 3), implementation of the traffic management strategy for Kent Street is secured through Requirement 24 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3). Traffic surveys undertaken between 18 and 25 October 2023 (excluding data collected between the 20 and 22 October 2023 when an accident occurred on the A272 closing the road) have been utilised for the base traffic flows on Kent Street. These traffic surveys were collected as part of the planning application for the Enso Battery Storage System located west of Kent Street (Planning Application Ref: DC/24/0054). Kent Street carries only low volumes of traffic, with an average annual weekday two-way traffic flow of 96 vehicles (of which 24 were Other Goods Vehicle's (OGVs)/HGVs) recorded in the survey. The following documents have been updated at Deadline 3 to reflect the revised traffic flows on Kent Street: • **Outline Construction Traffic Management Plan [REP1-010]** (updated at Deadline 3); and • **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[REP1-008]**. Further to this, **Chapter 32: ES Addendum, Volume 2** of the ES **[REP1-006]** will be updated and submitted at Deadline 4. Given that the baseline flows assumed average annual weekday two-way traffic flow of 100 the change in baseline traffic flow will not alter the assessment conclusions presented in **Chapter 32: ES Addendum, Volume 2** of the ES **[REP1-006]**.
TA 1.5	The Applicant	*Kings and Moatfield Lane*	As described in Section 5.7.10 of the **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3), the Applicant will apply general principles to ensure Private Means of Access (PMA) is

Ref	Question To:	Question	Applicant's Response
		Demonstrate how the measures set out OCoCP [PEPD-033] including advance warning, plating, backfilling outside working hours and localised diversions around the works would in practice be deployed to maintain access for residents and businesses of Kings and Moatfield Lane.	maintained throughout the construction of the onshore cable crossing at Kings and Moatfield Lane. As set out in the PMA principles described in Section 5.7.10 of the **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3), the detailed management of access for individual crossing locations, including potential diversion routes will be developed during detailed design, in collaboration with affected stakeholders. The Applicant will give advance notice (at least months) to affected stakeholders of the expected crossing works, as soon as these are programmed as also defined in the **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3). Both Kings and Moatfield Lanes are narrow single lane roads, less than six metres wide. The Applicant expects that at least a single trench construction can be achieved in a single working day across the road, and that the road can be sufficiently re-instated at the end of the working day to facilitate access outside working hours. Plating over a construction site, such as a cable trench is a commonly applied technique in highways streetworks. The Applicant will ensure that regulatory guidance such as British Standard (BS) BS:5975:2008+A1:2011 and TAL6/14 are followed. There may be short waiting times for vehicle traffic to allow construction workers to put road plating in place.
TA 1.6	The Applicant	*Michelgrove Lane* Provide an update on the development of a traffic management strategy for Michelgrove Lane.	A traffic management strategy to facilitate access along Michelgrove Lane by construction traffic has been provided in Appendix D of the **Outline Construction Traffic Management Plan [REP1-010]** submitted at Deadline 3. The traffic management strategy for Michelgrove Lane (access A-26) and Tolmare Farm access junction (access A-28) is based upon the following principles: • Access for all construction traffic from the A280 will be taken solely from A-26 Michelgrove Lane. This will be supported by the following access strategy: • Heavy Goods Vehicle (HGV) access to be permitted only as a left-turn from south of the A280 / Michelgrove Lane junction (access A-26). HGVs arriving from the north will therefore be required to travel south to the Clapham Roundabout to complete a U-turn; • Light Goods Vehicle (LGV) access will be permitted to enter and exit Michelgrove Lane (access A-26) from both directions but will not use Tolmare Farm (access A-28) for entry or exit; • Exit for HGV construction traffic to the A280 will be taken solely from A-28 Tolmare Farm access. This junction will be controlled by temporary traffic signals to facilitate the safe movement of vehicles out of the junction; • A temporary 40mph speed limit will be applied on the A280 as a reduction to the existing national speed limit; and • 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 as shown within the proposed DCO Order Limits on Sheets 11 and 12 of the **Onshore Works Plans [PEPD-005]** and Work No. 13 of Schedule 1 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3). For further detail on the traffic management strategy along Michelgrove Lane refer to Section 2 of Appendix D of the **Outline Construction Traffic Management Plan [REP1-010]** submitted at Deadline 3. Through inclusion in the **Outline Construction Traffic Management Plan [REP1-010]** (updated at

Ref	Question To:	Question	Applicant's Response
			Deadline 3), implementation of the traffic management strategy for Kent Street is secured through Requirement 24 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3).
C	The Applicant	*Access Rights* The ExA notes from the Applicant's response to a request at ISH1 [EV3-001] to explain the use of Dragons Lane by Heavy Goods Vehicles (HGVs) in the operational phase of the Proposed Development [REP1-018], that this would be "in exceptional circumstances during unscheduled maintenance or operational faults" and further "in the very unlikely event that the operational access proves unsuitable for the type of vehicle required for a repair, further consents and land rights may need to be procured if required for larger vehicle access." For clarity during all phases of the Proposed Development, should Schedule 7 of the draft DCO [REP2-002] specify: a) The type of vehicle permitted to use construction, light construction and operational accesses; and b) The type of vehicle permitted and in what phase of the Proposed Development for construction and operational and light construction and operational accesses.	Table 4-4 of the **Outline Construction Traffic Management Plan** **[REP1-010]** (updated at Deadline 3) provides details of vehicles classifications for Light Goods Vehicles (LGVs) and Heavy Goods Vehicles (HGVs) that will be used during construction of the onshore elements of the Proposed Development and can be linked to use of construction and light construction access contained within the same document. Stage specific construction traffic management plans will be produced in adherence of controls contained within the **Outline Construction Traffic Management Plan** **[REP1-010]** (updated at Deadline 3) secured through Requirement 24 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). The purposes listed in Schedule 7 for which Construction and Operational Access Rights are sought include the rights to *"(a) pass and re-pass with or without vehicles, plant, machinery, apparatus, personnel, equipment and materials*". This wording reflects common practice when drafting an easement for access rights and is widely used and well understood by landowners, beneficiaries of rights and the Land Registry. This conventional wording does not restrict the type of vehicles that may in practice be used when exercising the land rights. The Applicant does not consider it necessary or appropriate to add additional complexity in seeking to define what type of vehicle may use the land rights sought in Schedule 7 to the Development Consent Order (DCO) and/or at what phase of construction and/or operation those vehicles may use the access rights sought. Those matters are more appropriately controlled, in respect of the construction phase, through the **Outline Construction Traffic Management Plan** **[REP1-010]** (updated at Deadline 3) referred to above which is secured by the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). In relation to the operation and maintenance phase, as confirmed in **Chapter 4: The Proposed Development, Volume 2** of the Environmental Statement **[APP-045]**, and within Action Point 18 in **Deadline 1 Submission – 8.25 Applicant's Response to Action Points Arising from Issue Specific Hearing 1** **[REP1-018]**, maintenance of the onshore cable is expected to be minimal, and unscheduled maintenance or emergency repair visits typically involving attendance by up to three light vehicles, such as vans, in a day at any one location. Heavy goods vehicle (HGV) access may be required in an unlikely worst-case scenario given the design, construction and commissioning of the onshore export cable are undertaken in a way to ensure that no replacement or repair is necessary over the lifetime of the asset. Such traffic management measures as would be in place during the construction phase would not ordinarily be replicated in detail in an easement and nor would any description of the anticipated level of use during the operation and maintenance phase. Nor would the DCO control documents (or equivalent planning permission approved documents) be referenced on the registered title burdened by the easement at the Land Registry. To do so would, for example, risk the Applicant having to apply to the Land Registry to vary the registered right in the event that there is an approved variation either to the DCO or to the relevant control documents, which may require landowner consent that cannot be secured, and/or risk giving rise to disputes over the scope of the land rights. The Applicant therefore considers that the purposes for which the access rights may be exercised should retain as drafted.
TA 1.8	West Sussex CC	*Accesses*	

Ref	Question To:	Question	Applicant's Response
		The Applicant provided responses to the comments you made in Table 1a of the LIR [REP1- 054] on construction and operational accesses in [REP2-020]. Confirm if the responses have addressed the concerns and if there are any outstanding issues, with recommendations on how they should be addressed.	
TA 1.9	The Applicant	*Construction Traffic Movements and HGV Deliveries* The ExA notes that the Applicant has committed to reviewing West Sussex CC's request to avoid construction traffic movements at peak periods in its response to the LIR [REP2-020]. For Deadline 3, also consider how HGV deliveries could be managed to avoid peak periods at traffic sensitive locations and for any measures proposed (for both construction traffic and HGV deliveries), confirm how they would be secured in the draft DCO [REP2-002].	The Applicant has updated the **Outline Construction Traffic Management Plan [REP1-010]** at Deadline 3 which provides the following limits on heavy goods vehicle (HGV) deliveries: • For HGVs travelling to / from accesses A-56 and A-57 through Cowfold during the weekday morning peak hour / school opening period (08:00 to 09:00), school closing period (15:00 to 16:00) and evening peak hour (17:00 to 18:00): • Access A-56 will be limited to 1 HGV delivery; and • Access A-57 will be limited to 2 HGV deliveries. In addition to the timing restrictions noted above, all construction traffic movements to access A-37 in Washington will be restricted to avoid school start and end time at access A-37 in Washington. These limits will be controlled through the Delivery Management System and the requirement for contractors to pre-book limited delivery slots within the peak traffic hours identified. Further information on the proposed Delivery Management System is provided in Section 8.4 of the **Outline Construction Traffic Management Plan [REP1-010]** (updated at Deadline 3). These limits would be included within the stage specific Construction Traffic Management Plans secured via Requirement 24 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3).
TA 1.10	The Applicant	*Construction Duration* Confirm the length of the construction programme and ensure that it has been used consistently throughout the ES.	The anticipated worst-case total construction duration for all onshore infrastructure to be complete, operational and for full landscape reinstatement is approximately four years as stated in Section 4.7 of the **Chapter 4: The Proposed Development, Volume 2** of the Environmental Statement (ES) **[APP-045]**. The **Outline Construction Traffic Management Plan [REP1-010]** (updated at Deadline 3) and **Appendix 23.2: Traffic Generation Technical Note, Volume 4** of the ES **[REP1-008]** have been updated and submitted at Deadline 3 to ensure a consistent programme length has been stated throughout the documents.
TA 1.11	The Applicant	*Outline Construction Traffic Management Plan* The ExA notes that the Applicant in response to issues raised in West Sussex CC's LIR [REP2-020] has committed to amend or consider amending the OCTMP and provide an updated version at Deadline 3. In addition to the updated	The **Outline Construction Traffic Management Plan [REP1-010]** (updated at Deadline 3) and **Outline Construction Workforce Travel Plan [APP-229]** (updated at Deadline 3) have been updated in line with the **Deadline 2 Submission – 8.43 Category 8: Examination Documents – Applicant's Responses to West Sussex County Council's to Deadline 1 Submissions [REP2-020]**. A log has also been provided in Section 2.5 (Stakeholder feedback) of the **Outline Construction Traffic**

Ref	Question To:	Question	Applicant's Response
		document, provide a log of all the issues for which such a commitment was made and how it has been addressed.	**Management Plan [REP1-010]** (updated at Deadline 3) which details the updates made within the document.
TA 1.12	The Applicant	*Oakendene Industrial Estate* Explain how would access for tenants, customers and deliveries (including by HGV) to Oakendene Industrial Estate be safely maintained throughout the Proposed Development.	The Applicant is preparing a preliminary design for the junction which will be subject to an independent Road Safety Audit (RSA) and submitted to West Sussex County Council for approval. This design will safely accommodate the access for users of Oakendene Industrial Estate, through temporary realignment of the existing access road within the proposed DCO Order Limits. In addition, it is proposed as part of the **Outline Construction Traffic Management Plan [REP1-010]** (submitted at Deadline 3) that a 40mph speed limit is applied to the A272 during the construction phase This 40mph speed limit would replace the existing national speed limit that is in place between Cowfold and west of Bolney Chapel Road. The aim of this speed limit reduction is to maintain safe access at the Oakendene Industrial Estate access junction, whilst noting that there is not a significant history of accidents at this junction. For example, from a further review of accident data outlined in **Chapter 32: ES Addendum, Volume 2** of the Environmental Statement **[REP1-006]**, four slight accidents have occurred between 2017 and 2022 in the vicinity of the junction. Only one of these accidents occurred due to a vehicle turning right into the junction. The others were caused by poor surface conditions (frost/ice) causing skidding on the bend; and vehicles overtaking on or slowing for the bend causing collisions. Further to this, the construction vehicle movements at access A-62 are set out below: • In the total construction peak week, there will be a 173 daily vehicle movements, of which 51 will be HGVs. This is the equivalent of approximately 14 vehicles per hour (7 entering and 7 exiting) In the HGV construction peak week, there will be 65 daily HGVs (only for 1 week), which is 5-6 movements per hour (2-3 entering and 2-3 exiting); and • The average total construction vehicle movements will be 21, of which there will be an average of 5 daily HGV movements. The Applicant therefore maintains the view that access to the Oakendene Industrial Estate can be safely maintained during the construction phase.
TA 1.13	The Applicant	*Core Working Hours for Construction* The Applicant updated commitment C-22 within the Commitments Register [REP1-015] at D1 to: "*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 Applicant has considered the request from West Sussex County Council WSCC but considers this to be impracticable, particularly when considered in combination to the morning peak hour heavy goods vehicle (HGV) limits that are now proposed within the **Outline Construction Traffic Management Plan [REP1-010]** (updated at Deadline 3) for some traffic sensitive locations. The working hours proposed by West Sussex County Council would require mobilisation to occur during the peak hour of 08:00-09:00 which would remove the ability to apply HGV restrictions at traffic sensitive locations. This would then mean that mobilisation would not be able to start in some locations until 09:00 which will reduce the available working hours and as a result may delay the overall construction programme. Alternatively, if peak hour restrictions were not applied, these working hours would increase the number of construction vehicles on the network in peak hours through mobilisation related activities.

Ref	Question To:	Question	Applicant's Response
		The activities permitted in the *"shoulder hour"* would include *"deliveries to site and unloading."* Respond to West Sussex CC's preference set out in its LIR [REP1-046] for core working hours*: "08:00 to 19:00 hours Monday to Friday; and 09:00 to 13:00 hours on Saturday', with no HGV movements and other construction traffic taking place an hour before or after the stated working hours unless there is a need associated with the specific activities or circumstances highlighted by the applicant that may occur outside of these hours."*	The additional hour of core working in the evening is considered to provide only marginal benefits as most end-of-day activities relate to 'making safe' and personnel transport which would be completed during the shoulder hour proposed by the Applicant.
TA 1.14	West Sussex CC	*Assessment of Traffic Effects* Provide comments on the Applicant's response to issues raised by CowfoldvRampion on the assessment of the effects of the Proposed Development on traffic in the Cowfold area in its WR [REP1-089] contained in section 10 of Appendix A [REP2-030]. Confirm whether all the issues raised have been adequately addressed, subject to the agreement of a traffic management plan for Kent Street and the design of the accesses to the substation site and Oakendene temporary construction compound.	
TA 1.15	SDNPA	*PRoWs in the South Downs National Park* Respond to the Applicant's response contained in [REP2-024] on the issues raised in the LIR [REP1-049] regarding the impact of the Proposed Development on PRoWs in the National Park. List any outstanding concerns and provide recommendations for addressing them.	

Table 2-18 Terrestrial Ecology

Ref	Question To:	Question	Applicant's response
TE 1.1	The Applicant	*Ecological Surveys in the Vicinity of the Proposed Substation Location at Oakendene and Cable Route Leading to this Site* Provide a detailed explanation of the surveys undertaken at, and in the vicinity of, the proposed substation at Oakendene and the cable route leading to this site around the Cowfold Stream crossing and Cratemans Farm detailing: a) The type of survey. b) Date and timings undertaken. c) Level of qualifications and experience of those who undertook the surveys. d) Whether they were desktop or field surveys. e) Which guidelines were followed and any deviations from the stated methodology. f) Duration of the survey and frequency of data collection. g) Quality of the data collected, including details such as whether field monitors were in working order throughout. For any desk studies clearly explain the source of the data used.	The Applicant below summarises the field surveys in the area between the A281 and A272 (including the onshore substation site at Oakendene and onshore cable route as it passes Cratemans Farm and crosses the Cowfold Stream). The Applicant considers it notable that the approach taken to survey, including sampling efforts for bats and hazel dormouse, were discussed with the Expert Topic Group (ETG) on several occasions as documented in **Appendix C Meeting Minutes, Evidence Plan [APP-243]** for ETG meetings held on 16 March 2021, 23 March 2021, 03 November 2021, 08 November 2022 and 07 March 2023. Other technical engagement with various parties including South Downs National Park Authority, West Sussex County Council and Sussex Wildlife Trust all included discussion of approach. The sampling approach was not objected to by any of the parties during this engagement (see Section 22.3 of **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement (ES) **[APP-063]**). A sampling approach has also been applied for other linear projects to allow for an understanding of the temporary effects associated with installation. It is notable that full post-consent surveys will also be undertaken (see **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3)) to inform detailed design, including the continued implementation of the mitigation hierarchy (see commitment C-292 in the **Commitments Register [REP1-015]** (updated at Deadline 3)). **Habitat surveys** Field surveys following Phase 1 habitat survey methodology and hedgerow survey methodology were undertaken in line with guidance (stated as being between late March and mid-October in the Handbook for Phase 1 habitat survey (Joint Nature Conservation Committee (JNCC), 2010 (updated 2016)) in May 2021, August 2021 and again in April 2022. Concurrently with this survey signs of activity for water vole, otter and badger were also searched for (see **Appendix 22.11: Badger, otter and water vole survey report, Volume 4** of the ES **[APP-189]**. The survey was focused on the proposed DCO Order Limits. In August 2021, hay had been recently cut, prompting the second visit. The following species were recorded in the field at Cratemans Farm marked as Field B by Ms Creaye **[REP1-106]**, meadow foxtail, crested dogs-tail, Yorkshire fog, smooth meadow grass, white clover, dovesfoot cranesbill, birdsfoot trefoil, fleabane, common vetch, creeping thistle, creeping buttercup, creeping cinqfoil, silverweed and common knapweed. In Field A, the species recorded were Perenial ryegrass, Yorkshire fog, field scabious, dovesfoot cranesbill, field woodrush and soft rush. The list of species is not dissimilar to that submitted by Ms Creaye **[REP1-106]**. Surveys were undertaken by [redacted] and [redacted] At the time of the first survey, [redacted] was an assistant consultant with Wood PLC (latterly acquired by WSP) with 2 years and 2 months experience. At the time of the second survey, [redacted] was a consultant ecologist with 3 years and 1 month experience. He is currently a Biodiversity Officer with Oxfordshire County Council. At the time of the survey [redacted], was a principal consultant with Wood PLC with 9 years of consultancy experience. She is currently a principal ecologist at Logika Consultants. Duration of the survey on any given day is unknown (i.e. how much time in each field was spent on a given day, as this is not a typical parameter to record for this methodology). National Vegetation Classification surveys (following NVC Users Handbook, 2006) were undertaken in two areas close to Fields A and B as they were in the flood zone and therefore potentially could be placed in the category of coastal and floodplain grazing marsh. Surveys in these locations were undertaken on 14 June 2022 by Gary

Ref	Question To:	Question	Applicant's response

Lindsay BSc, MSc, ACIEEM, an ecological consultant with Wood Plc that at the point of survey had 5 years and 3 months of ecological consultancy experience (currently a Principal Ecologist with WSP).

Further information on survey methods and results can be found in **Appendix 22.3: Extended Phase 1 habitat survey report, Volume 4** of the ES **[APP-181]**, **Appendix 22.4: National Vegetation Classification survey report, Volume 4** of the ES **[APP-182]** and **Appendix 22.5: Hedgerow survey report, Volume 4** of the ES **[APP-183]**.

Fauna surveys

Great crested newt eDNA surveys, following the standard method described by Biggs et al. 2014 were undertaken in the area between the A281 and the A272 between 15 April and 30 June in 2021. Further survey was carried out in 2022. The ponds in the area were sampled in different years due to access arrangements and re-visits to address any inconclusive results received from laboratory analysis. The surveys were undertaken by the following (noting surveyors worked in pairs due to working near water) – Jack Wheeler (see above for experience; (great crested newt survey licence holder)), Rebecca Carter-Whitehead BSc (great crested newt survey licence holder; at time of survey was consultant ecologist with Wood PLC and currently a senior ecologist with the Ecology Co-Op) and Anna Cooper BSc (Assistant Ecologist with WSP at time of survey, currently Citizen Science Project Officer with Wiltshire Wildlife Trust).

Further information can be found in **Appendix 22.7: Great crested newt environmental DNA survey report 2021-2023, Volume 4** of the Environmental Statement (ES) **[APP-185]**.

In the area between the A281 and the A272 (including the onshore substation location at Oakendene) dormouse surveys were undertaken in three areas (survey site 5, 6, and 7), methods followed those in the Dormouse Conservation Handbook, Second Edition (Bright *et al*., 2006). Not all potential dormouse habitat along the cable corridor was targeted on the basis that presence/absence could be sampled adequately from a sampling approach of optimal habitats., Mitigation measures for localised temporary habitat loss would remain the same across the area for temporary habitat losses and principles of licensing could be met and a full survey would be undertaken post-consent to inform any necessary licence applications. The mitigation would be in line with the Dormouse Conservation Handbook (Bright *et al.,* 2006) where displacement of resident animals (through appropriate habitat removal) on losses of less than 100m of hedgerow is predicted.

Site 5 was monitored between July and November 2021, Site 6 between May and November 2021 and Site 7 between May and October 2022. Appropriate index of probability scores for a nest tube survey were reached in all areas in order to correspond with the Dormouse Conservation Handbook. Surveys were undertaken by a team of ecologists over the survey period. These were Jon D'Arcy BSc, MCIEEM (consultant/senior consultant with Wood PLC during the survey period, currently senior ecologist with Tetra Tech; hazel dormouse survey licence holder), Jack Wheeler (see above for details), Luke Burgess (consultant with Wood PLC during the survey period, currently senior ecologist with RSK Biocensus; hazel dormouse survey licence holder), Rebecca Carter Whitehead (see above for details; hazel dormouse survey licence holder), George Trill MSc (assistant ecologist with Wood PLC during survey period, currently consultant ecologist with WSP), Oliver Gaskin BSc, MSc (assistant ecologist with Wood PLC during survey period, currently a freelance ecologist) and Jon Bannon BSc, MSc, MCIEEM (Director of Babec Ecological Consultants).

Further information can be found in **Appendix 22.9: Hazel dormouse survey report 2021-2022, Volume 4** of the ES **[APP-187]**.

Ref	Question To:	Question	Applicant's response
			Bat activity transects and static detector locations AT09 and AT10 were located between the A281 and A272. Ground level assessment of the potential for trees to support bat roosts was also undertaken. Bat surveys followed the Bat Conservation Trust's Good Practice Guidelines (Collins, 2016). Ecologists who undertook the work were Jon Bannon (see above for details; bat survey licence holder), Jack Wheeler (see above for details), Rebecca Carter-Whitehead (see above for details, bat survey licence holder), George Trill (see above for details), Hannah Corrigan BSc (senior ecologist with Wood PLC at time of survey, currently senior ecologist with EPR; bat survey licence holder) and Fiona Cargill MSc (senior ecologist with Wood PLC; bat survey licence holder). Static bat detectors did register faults (as they do regularly) at different times during surveys in 2021 and 2022, but overall there is a large and robust dataset. Further information can be found **Appendix 22.8: Passive and active bat activity report, Volume 4** of the ES **[APP-186]**. Breeding bird surveys were undertaken between the A281 and A272 (equating survey areas 14, 15 and 16) between March and June 2021. The breeding bird surveys followed the British Trust for Ornithology's common bird census methodology, but using a six rather than ten visit programme as is typical for development projects (for example see Bird Survey & Assessment Steering Group. (2023). Bird Survey Guidelines for assessing ecological impacts, v.1.1.1. https://birdsurveyguidelines.org [accessed 16/04/2024]. The ornithologists who undertook the surveys were Rob Werran BSc (consultant ecologist with Wood PLC at time of survey, currently senior consultant with WSP), Sibrand Rinzema BSc, MSc, QCIEEM (consultant ornithologist with Wood PLC at time of the survey, currently Ecology project lead for Antea Group Nederland, Conor MacKenzie BSc (assistant ornithologist with Wood PLC at time of survey, currently a freelance ecologist) and Craig Brookes BSc (senior consultant with Wood PLC at time of survey, currently principal ecologist with Logika Consultants Ltd). Further information can be found **Appendix 22.13: Breeding bird survey, Volume 4** of the ES **[APP-191]**. The data collected through this survey programme provides a good basis for assessment.
TE 1.2	Horsham DC Natural England The Environment Agency	*Ecological Surveys in the Vicinity of the Proposed Substation Location at Oakendene and Cable Route Leading to this Site* The ExA would appreciate a response from Horsham DC, Natural England and the Environment Agency to the Applicant's answer to WQ TE 1.1, either at or in advance of Issue Specific Hearing 2, to be held w/c 13th May 2024, commenting on whether remaining concerns exist regarding: a) The quantity or quality of ecological surveys undertaken by the Applicant at and in the vicinity of the Oakendene substation site and cable route near to this location. b) The extent to which the appropriate guidelines and methodologies have been followed including the time of year the surveys were carried out.	The Applicant acknowledges that this question is directed to Horsham District Council, Natural England and the Environment Agency but refers to response above in **reference TE 1.1**.

Ref	Question To:	Question	Applicant's response
		c) The conclusions of the ecological assessments undertaken by the Applicant at and in the vicinity of the Oakendene substation site and cable route near to this location.	
TE 1.3	Horsham DC Arun DC Natural England The Environment Agency	*Terrestrial Ecological Surveys and Mitigation for the Whole of the Landward part of the Proposed Development* Comment on whether remaining concerns exist regarding: a) the quality of terrestrial ecological surveys in general undertaken by the Applicant for the whole of the landward part of the Proposed Development? b) the conclusions the Applicant has come to for the terrestrial ecological assessments for the whole of the landward part of the Proposed Development. c) the extent to which the appropriate guidelines and methodologies have been followed by the Applicant when undertaking relevant terrestrial surveys for the whole of the landward part of the Proposed Development. d) the quality and likely effectiveness of the mitigation the Applicant is proposing for potential impacts on terrestrial ecology for the whole of the landward part of the Proposed Development.	The Applicant acknowledges that this question is directed to Horsham District Council, Arun District Council, Natural England and the Environment Agency but refers to response above in **reference TE 1.1**.
TE 1.4	The Applicant Horsham DC Natural England Environment Agency	*Nightingale Species in the Vicinity of the Proposed Substation location at Oakendene and Cable Route leading to this Site* In response to concerns raised in WRs by CowfoldvRampion [REP1-089], Ms Smethurst [REP1-132] and Ms Creaye [REP1-106] amongst others regarding potential impacts on nightingales in the vicinity to the proposed substation site at Oakendene and Cratemans Farm, explain: a) the nature, likely duration and likely time of year of construction work in the vicinity of: i. Cratemans Farm ii. The proposed substation site at Oakendene b) the outcome of the environmental assessment on this species at these locations	The Applicant is proposing to retain the flexibility to construct all year round within the vicinity of the Cowfold Stream and at the Oakendene substation location. Commitment C-21 (**Commitments Register [REP1-015]** (updated at Deadline 3) and included within **the Outline Code of Construction Practice [APP-033]** (updated at Deadline 3) and secured via Requirement 22 in the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3)) ensures vegetation removal outside of the bird breeding season. Works along the onshore cable route will progress rapidly (cable ducts being laid at approximately 150m per day), although the haul road in any section is in use for a longer period. Each of the trenchless crossings in this area is expected to last between 3-4 months, including set-up of compound works, excluding cable pull-ins. Commitments that are in place to guard against potential effects on breeding birds include commitment C-21 (scheduling of vegetation removal to avoid damage or destruction of active nests) and commitment C-207 (employ of an Ecological Clerk of Works) (see the **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3)). Nightingale often occur in highly disturbed areas including military training areas at Lodge Hill, Kent and Wakering Stairs, Essex (for example Hewson *et al*. 2018 - Estimating national population sizes: Methodological challenges and applications illustrated in the common nightingale, a declining songbird in the UK - Hewson - 2018 - Journal of Applied Ecology - Wiley Online Library). A large and increasing population of nightingale is a well-known feature of Berlin, Germany. Further, habitat loss is highly restricted and therefore individual territories will not be compromised by lack of nesting or foraging areas. Therefore, as outlined in **Chapter 22: Terrestrial**

Ref	Question To:	Question	Applicant's response
			ecology and nature Conservation, Volume 2 of the Environmental Statement **[APP-063]** nightingale will not be subject to significant effects during the construction of the onshore cable route.
TE 1.5	The Applicant Natural England The Environment Agency Horsham DC	*Ecology of Priority and Irreplaceable Habitats in the Vicinity of the Proposed Substation site at Oakendene and Cratemans Farm* **The Applicant** The ExA acknowledges the Applicant's responses to Ms Creaye's WR in [REP2-029]. Neverthe-less, for clarity and transparency, the ExA seeks specific responses from the Applicant to the following points raised by Ms Creaye in her WR [REP1-106]. a) Provide comment and responses to Ms Creaye's comments in her WR [REP1-106] stating: i. On page 2: "*Just because this has not been designated in the past for its wildlife value does not prove that there are no irreplaceable habitats here. Habitat Regulations list 'possible Special Areas of Conservation' for consideration*." ii. On page 16: "*We believe that there is priority habitat at Cratemans Farm and just because it has not been designated as such to date, should not be marked for destruction without proper assessment. Ecologist, Perry Hockin of Aborweald has described the whole habitat as 'irreplaceable*." iii. On page 17: "*We have gathered good evidence of MG5 Priority habitat Unimproved Lowland Meadow indicator species. However, the DCO submission states that there is no priority habitat in the area. We do not believe this to be true if the necessary surveys were made in the summer months*." iv. On page 24: "*The proposed development of the site in its current form would result in a substantial and irrevocable loss to biodiversity that cannot be compensated, specifically by the usage of traditional cut and cover techniques which will affect the delicate soil conditions for hundreds of years to come, and by the usage of Field A as a HDD operational depot*." v. On page 24: "*It is my professional opinion that as crossing the Cowfold Stream will require Horizontal Directional Drilling (HDD) that this section be extended to*	The Applicant acknowledges that not all areas that might meet designation criteria for Sites of Scientific Interest, Special Areas of Conservation (SAC) or Special Protection Areas are designated. However, the Applicant does not agree that the area in question contains irreplaceable habitat or meets the criteria to be designated at a European level (i.e. as a SAC). To be considered an SAC a site must support habitats listed on Annex I or species listed on Annex II of the Habitats Directive. The area around Cratemans Farm does not contain habitat that meets criteria to meet any Annex I habitat. Annex II species do occur in the area including great crested newt, otter and barbastelle bat, as they do across large areas of south-east England. However, the species would not qualify under selection criteria for nationally important Sites of Special Scientific Interest and therefore do not meet those to consider it important at a European level. Irreplaceable habitats are defined in the Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024 as: 1. Ancient woodland 2. Ancient and veteran trees 3. Blanket bog 4. Limestone pavements 5. Coastal sand dunes 6. Spartina saltmarsh swards 7. Mediterranean saltmarsh scrub 8. Lowland fen None of the habitats listed, other than ancient woodland or ancient and veteran trees, could occur in the area around Cratemans Farm. This is due to both the inland location and the soil types required to meet the priority habitat descriptions of these habitats as published by the Joint Nature Conservation Committee. Ancient woodland listed on the ancient woodland inventory is not present within the proposed DCO Order Limits in this area. None of the woodland recorded in the proposed DCO Order Limits could be described as being ancient (i.e. continuously wooded since 1600 AD) area based on historic maps and aerial photography. Appendix 22.16: Arboricultural Impact Assessment, Volume 4 of the Environmental Statement **[APP-194]** records the trees in the area around Cratemans Farm. It does not identify any ancient or veteran trees in this area. Therefore, irreplaceable habitats as defined by the UK Government are not present at Cratemans Farm or in the surrounding area. It is also noted that Natural England's Technical Note TIN110 explicitly acknowledges that created or restored grasslands can become priority habitats. There is discussion of whether or not the fields at Cratemans Farm qualify as priority habitat. The Habitat of Principal Importance/priority habitat category this would fall in if it were, is lowland meadow. It is noted that the Priority Habitat Inventory (made available and managed by DEFRA on Magic.defra.gov.uk) does not show this habitat in this location, although it is recognised that this mapping is not comprehensive. It is the Applicant's view that these fields do not meet the criteria based on survey results (see response to Examining Authority's Written

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		cover as much of the areas around Fields A and B as possible. Furthermore, the route should be adjusted to affect the less diverse areas of heavily grazed horse pasture in the immediate wider landscape." vi. On page 30: "*We believe that proper, in-depth field surveys must be completed in summer to establish the true quality of these meadows or they will be lost unnecessarily. The soil structure cannot be reinstated in our lifetimes. The DEFRA maps show very little priority habitat of Unimproved Lowland Meadow in the Horsham District or West Sussex in general*." b) Provide a response on whether the areas around Oakendene and Crateman's Farm contain irreplaceable habitats. Justify the explanation.	Question **reference TE 1.1**). However, the **Outline Landscape and Ecology Management Plan [APP-232]** (updated at Deadline 3) states in paragraph 4.6.1 that all semi-improved and calcareous grassland would be subject to National Vegetation Classification survey during the detailed design phase with those grasslands meeting the criteria to be reinstated using the existing seed bank as opposed to sowing a seed mixture. In the updated version of the **Outline Landscape and Ecology Management Plan [APP-232]** (updated at Deadline 3) green hay strewing has also been included as a way to boost the seed bank within the topsoil. It should also be noted that a new commitment (C-294) has been provided in the **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3) which states *"To inform the detailed design process and biodiversity net gain calculations habitat surveys of areas that may be subject to temporary or permanent loss will be undertaken during the spring and summer period. Surveys will follow UK Habitats Classification methodology with potential Habitats of Principal Importance subject to National Vegetation Classification survey*." This is to make it more explicit that a full update of the habitat surveys will take place to inform the detailed design process and the biodiversity net gain (BNG) calculations. This is aligned with a further new commitment (C-292 secured through the **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3) via Requirement 22 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3)) that states *"During detailed design the mitigation hierarchy will be applied to avoid losses of key habitats (e.g. woodland, hedgerows, scrub, watercourses and semi-improved grassland) where possible, and where not to minimise losses and mitigate for them. At each crossing of sensitive habitats the Ecological Clerk of Works will provide advice to the design engineers with justification of approach provided. The approach at individual crossings will be detailed in the relevant stage specific Code of Construction Practice."* The Applicant is therefore of the view that appropriate measures are in place to ensure that suitable safeguards are in place to manage the effects on the fields identified by Ms Creaye. The requests for extension of the trenchless crossings (TCs) (see Examining Authority Written Question **TE 1.5a(v)**) proposed in this area (notes as TC-25 and TC-26) are noted. However, it should be recognised that access for the section to the Cowfold Stream is from the A281 so that even with additional trenchless crossing, a haul road will be required to be able to work in this section. On the basis that this habitat can be restored (as per Natural England Technical Note TIN110), the Applicant's survey information and generally applied criteria for use of trenchless crossings the Proposed Development as described is considered appropriate.
		Natural England and Horsham DC In light of the comments above: c) Comment, if required, on the Applicant's assessment and conclusions in relation to whether or not the meadow habitat around Crateman's Farm and Moatfield Farm qualifies as priority habitat lowland meadow, as summarised in the Applicant's response to CowfoldvRampion's Written Representation [REP2-030] page 56-57. d) Inform the ExA whether the areas around Oakendene and Crateman's Farm contain irreplaceable habitats. e) Comment on the mitigation for the loss of habitats in the area around Cratemans Farm and Oakendene and	

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		whether they are likely to be effective. If not, explain what additional measures would be required.	
TE 1.6	The Applicant	*Response to West Sussex LIR – Arboriculture* Provide a response to the following points in West Sussex CC's LIR [REP1-054] Table 12: Summary of Impacts – Arboriculture, starting on page 107: • Significant loss of high and moderate quality trees (category A & B), including locally notable trees (historically) and unjustified tree loss within Oakendene substation.	The Applicant notes that tree removal is shown based on the realistic worst-case scenario for the delivery and operation of the onshore substation at Oakendene. This is based on the indicative onshore substation layout described in **Chapter 4: The Proposed Development, Volume 2** of the Environmental Statement **[APP-045]**. Detailed design will seek to minimise losses through the implementation of the mitigation hierarchy as outlined in commitment C-292 in the **Commitments Register** **[REP1-015]** (updated at Deadline 3) secured through the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) via Requirement 22 within the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3).
		• No unnecessary loss of, or adverse impacts to, retained arboricultural features to facilitate the final project design subject to implementation of mitigation measures. • No adverse impacts or loss of veteran trees and ancient woodland - subject to implementation of mitigation measures.	The approach to tree protection is within Section 8.3 of **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the Environmental Statement **[APP-194]**. Section 4.7 of the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) includes commitment C-285 to produce an Arboricultural Method Statement (AMS) and Tree Protection Plan (TPP) based on the detailed design. The delivery of stage specific Landscape and Ecology Management Plans (LEMPs) in accordance with the Arboricultural Impact Assessment are described in the **Outline Landscape and Ecology Management Plan** **[APP-232]** (updated at Deadline 3).
		• No loss of deciduous woodland or traditional orchards (HPI) within surveyed features.	No loss of Habitats of Principal Importance or Traditional Orchards (HPI) within surveyed features is proposed. Within the Proposed Development deciduous woodland, some that would meet the priority habitat criteria to be considered 'lowland mixed deciduous woodland', will be lost due to onshore cable installation (see Section 22.9 of **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement **[APP-063]**). There is however, no proposed woodland loss at the onshore substation site at Oakendene.
		• Woodland fragmentation due to tree loss at Bolney Substation extension, identified as potential for deciduous woodland.	Arboricultural offsetting and enhancement measures (quantum of proposed tree planting) are described in the **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the Environmental Statement **[APP-194]**. Planting plans will be produced in response to a detailed design according to the planting location hierarchy provided in the **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the Environmental Statement **[APP-194]**. For tree group and woodland loss, an equivalent or greater area of tree cover to that being removed would be provided depending on the stem size of the trees being removed. The current size for the trees adjacent to the existing National Grid Bolney Substation is not known due to access restrictions during the tree survey, but it's likely that a minimum increase of 10% in area of tree removal versus trees planted would occur. The Applicant has provided an indicative layout of the habitats to be established on-site at the existing National Grid Bolney substation. The exact nature and scale of this planting will need to be flexible at this stage as the design of the assets on this site is yet to be determined by National Grid. As the final Landscape and Ecological Management Plan will be agreed with the relevant planning authority before being implemented (Requirement 12 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3)) the Applicant considers there is adequate opportunity to influence the design post-DCO consent.
TE 1.7	The Applicant	*Tree Value – Oakendene* Explain how the assessment of alternative sites to that of the proposed substation site at Oakendene, considered tree values at a site level, to inform design layout and	The tree survey at Oakendene took place in June 2021 prior to the decision on substation location being determined. The survey results did not identify veteran trees, but the hedgerows with trees were recognised as a priority habitat. This was taken into account when all environmental and engineering constraints were being considered in the round. Once Oakendene had been proposed as the preferred onshore substation location the

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		therefore site selection, as recommended within BS5837:2012.	realistic worst case scenario footprint for the substation was finalised and located in the most appropriate position accounting for environmental constraints (including visual impact) and deliverability (such as access and compound locations).
TE 1.8	The Environment Agency Southern Water	*Proposed Open Trench for Tree Group G887* In response to a concern raised by West Sussex CC in its LIR [REP1-054], the Applicant has confirmed that open cut trenching method is proposed through tree group G887 which West Sussex CC state would temporarily sever connections from the adjacent ancient woodland site, Olivers Copse, from the nearby woodland, Kitpease Copse. West Sussex CC further state that using a trenchless crossing in this area would significantly reduce impacts on the tree group, and consequently reducing negative impacts on landscape character and the visual amenity of users of the PRoW. The Applicant responded in [REP2-020] to say an open cut trenching method in this location has been specified as it lies within a Source Protection Zone (SPZ) for potable groundwater. a) Confirm which category of SPZ this location falls within, SPZ1 or another? b) Comment on the risk, if any, HDD could have to the public water supply at this location.	The Applicant recognises the concern of West Sussex County Council at this location. In order to reduce the level of effect and reflecting the value of this woodland in joining two areas listed on the ancient woodland inventory within the South Downs National Park, as new and exceptional mitigation, the working corridor has been reduced to 23m within the short section of woodland only. This location is situated within Source Protection Zone 2 and is situated approximately 209m to the east of the Angmering Southern Water Borehole. **Appendix 26.4: Hydrogeological Risk Assessment, Volume 4** of the Environmental Statement **[APP-218]** provides a targeted risk assessment for the construction phase at this location in relation to the Angmering Public Water Supply (see paragraphs 5.2.25 – 5.2.30). This includes geophysical surveys undertaken at the pre-application stage, and the specific mitigation proposals (commitment C-246) for a watching brief between Hammerpot and the Buckmans at the post-DCO pre-construction stage to ensure that there will be no interaction with potential karstic features during the construction phase. Commitment C-246 is set out in the **Commitments Register** **[REP1-015]** (updated at Deadline 3) and secured via Requirement 22 within the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). With regard to the design evolution, the Environment Agency and Southern Water attended meetings on 21 December 2021, 5 May 2022, 14 September 2022 and 6 April 2022 (see paragraphs 26.3.30 – 26.3.32 within **Chapter 26: Water environment, Volume 2** of the Environmental Statement **[APP-067]**). During these meetings Southern Water shared information on the location of potential karst features and provided feedback about potential routes and crossing techniques. The views and data have been fully taken into account in the careful design of the Proposed Development at this location. Both stakeholders acknowledged these measures as being generally acceptable in relation to hydrogeological risk.
TE 1.9	The Applicant	*Trees T609, T611, T613 & T617* Justify why trees T609, T611, T613 & T617 (including high and moderate quality trees) are identified for removal despite being within an area of trenchless crossing through HDD.	An updated version of **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the Environmental Statement (ES) **[APP-194]** will be submitted at Deadline 4 to show these trees as retained. These trees were originally shown as lost on a precautionary basis as the limit of deviation for the trenchless crossing compound TC-22a which overlapped with the root protection areas. However, the Applicant can now confirm that these trees (T609, T611, T613 & T617) would be retained as part of the Proposed Development.
TE 1.10	The Applicant Natural England Relevant Planning Authorities The Environment Agency SDNPA	*Protected Species - Hazel Dormouse* **The Applicant** a) The ExA requests an update to the Terrestrial Ecology chapter of the Environmental Statement [APP-063] to include the information from the document submitted into the examination at the PEPD relating to hazel dormouse, [PEPD-030] Environmental Statement Volume 4, Appendix 22.19: Hazel dormouse report 2023 Date: January 2024 Revision A. b) State whether the Best Practice Guidelines outlines in 'The Dormouse Conservation Handbook, Second Edition',	**Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement (ES) **[APP-063]** will be updated for submission at a future Examination Deadline. The Applicant can confirm that the hazel dormouse surveys were in line with The Dormouse Conservation Handbook, Second Edition (Bright et al. 2006) in the locations where they were carried out. The only difference between the approach taken and that of a more typical development (for example for residential dwellings) is that a sampling approach was taken at suitable habitats along the route, as opposed to covering all habitats in which dormouse may potentially occur. The reasons for this were as follows: 1. Surveys were proportionate to the scale of the Proposed Development and based on desk study data that provides no records from within the proposed DCO Order Limits;

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		have been adhered to. If not, has a detailed justification been provided? If not, the ExA requests that one is provided. c) State if the information this new report provides changes any of the conclusion in the Terrestrial Ecology chapter of the Environmental Statement [APP-063]. d) State whether the survey location sites for hazel dormouse have been updated in light of changes to the proposed cable route. Have survey sites been updated in line with best practice?.	2. Approach to mitigation will be consistent across temporary works due to their scale and short duration with displacement of animals through staged habitat removal (as per the Dormouse Conservation Handbook, Second Edition); and 3. Commitment C-232 (secured through the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) via Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3)) in the **Commitments Register** **[REP1-015]** (updated at Deadline 3) ensures that survey of all suitable habitat that will be subject to removal will be surveyed during the detailed design phase. It is also notable that the approach taken was discussed with the Expert Topic Group (ETG) on several occasions (see **Appendix C Meeting minutes, Evidence Plan** **[APP-243]** for ETG meetings held 16 March 2021, 08 November 2021 and 07 March 2023). Other technical engagement with various parties (who also formed part of the ETG) including South Downs National Park Authority, West Sussex County Council and Sussex Wildlife Trust all included discussion of approach. The sampling approach was not objected to by any of the parties during this engagement (see Section 22.3 of **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**). **Appendix 22.19: Hazel dormouse report 2023 – Revision A, Volume 4** of the ES **[PEPD-030]** submitted at Pre-Examination Procedural Deadline A provides additional survey for hazel dormouse from locations associated with the change in proposed DCO Order Limits made between the first Statutory Consultation Exercise (July to September 2021) Section 42 DCO Application submission in August 2023. No hazel dormice activity was recorded in the period May to November 2023 in the survey areas, and therefore, no change to the assessment, outcomes and conclusions provided within Section 22.9 of **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]** are required. Locations of hazel dormouse survey sites evolved to reflect the proposed DCO Order Limits at each stage of the design evolution up to the final proposed DCO Order Limits at DCO Application submission (August 2023). At each of these locations, hazel dormouse surveys were carried out following the nest tube survey methodology described within the Dormouse Conservation Handbook, Second Edition, other than in 2020 as surveys in this year commenced later in the year due to the start date of the project and COVID-19 pandemic causing disruptions in the early part of the survey season.
		Natural England, the Environment Agency, Relevant Planning Authorities and SDNPA e) Confirm if the surveys undertaken by the Applicant and proposed mitigation measures for hazel dormouse described in the Outline Landscape and Ecological Management Plan [APP-232] are adequate. If not, are there any other approaches that you consider would be effective in terms of mitigation measures for hazel dormouse?	
TE 1.11	The Applicant Natural England Relevant Planning Authorities	*Protected Species - Bat Surveys* **The Applicant** a) The ExA requests an update to the Terrestrial Ecology chapter of the Environmental Statement [APP-063] to include the information from the document submitted into	**Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement (ES) **[APP-063]** will be updated for submission at a future Examination Deadline. The results of the bat surveys from 2023 outlined in **Appendix 22.18: Passive and active bat activity report 2023, Volume 4** of the ES **[PEPD-029]** do not alter the outcome of the assessment and the conclusions in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**. West Sussex is

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	The Environment Agency SDNPA	the examination at the PEPD relating to bat activities, [PEPD-029] Environmental Statement Volume 4, Appendix 22.18: Passive and active bat activity report 2023 Date: January 2024 Revision A. b) State if the information this report provides changes any of the conclusions in the Terrestrial Ecology chapter of the Environmental Statement [APP-063]	known to support a wide variety and good numbers of bats. The data from the bat surveys demonstrate that all suitable habitat within the proposed DCO Order Limits will be used by bats. This has fed into the application of the mitigation hierarchy including avoiding suitable habitat where possible, minimising losses (such as use of trenchless crossings and notching of hedgerow (see commitment C-115 in the **Commitments Register** **[REP1-015]**)), mitigation (such as temporarily filling gaps prior to reinstatement (see commitment C-291 (secured through the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) via Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3)) in the **Commitments Register** **[REP1-015]** (updated at Deadline 3)) and compensation (mainly in the form of habitat creation to be delivered through the process outlined in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the ES **[APP-193]** (updated at Deadline 3)) secured through Requirement 14 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). It is the Applicant's view that bats will continue to use the landscape in vicinity of the onshore cable installation works. In most instances the gaps created in hedgerows, tree lines and woodland will be six metres or less in width (e.g. a 14m notched hedgerow is up to four 2m wide trenches for the cables and one 6m gap created for the haul road with sections of hedgerow in between them). The Joint Nature Conservation Committee's (JNCC) '*Habitat management for bats: a guide for land managers, landowners and their advisors*' (2001) outlines that (in point 1 on page 12) "…*even gaps as small as 10m may prevent bats using hedgerows and tree lines*'. Similarly, the Bat Conservation Trust in their guidance '*Landscape and urban design for bats and biodiversity*" (Gunnell, Grant and Williams, 2012) recommend avoiding the opening of gaps greater than 10m in extent. Pinaud et al. (2017) modelled landscape connectivity for greater horseshoe bats and recommend that gaps are kept to less than 38m. To mitigate any hesitancy to cross gaps commitment C-291 (in the **Commitments Register** **[REP1-015]** (updated at Deadline 3) secured through the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) via Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3)) has been put forward to ensure that a suitable material is in place to maintain a linear structure overnight (such as straw bales, willow hurdles or dead hedging). It is also necessary to consider that installation of the onshore cable ducts will progress at approximately 150m per day ensuring that activity will pass through individual locations quickly. Although the haul road in each section will be being used for a longer period, its use would largely be at times when bats are roosting (i.e. during the daytime). At the onshore substation site at Oakendene, the maintenance of corridors of vegetation, including advanced planting (see the **Outline Landscape and Ecology Management Plan** **[APP-232]** (updated at Deadline 3) secured via Requirement 12 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3)), will ensure that bats will be able to remain in the area. Although the construction of the onshore substation at Oakendene will result in a short-term negative effect on bats, the habitats to be created prior to, during and after the completion of the onshore substation will be beneficial to bats in the medium to long term. As stated in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]** no significant effects on bats are expected.
	Natural England, the Environment Agency, Relevant Planning Authorities and SDNPA c) Confirm if the proposed mitigation measures for bats described in the Outline Landscape and Ecological Management Plan [APP-232] are adequate. If not, are there any other approaches that you consider would be effective in terms of mitigation measures for bats.	

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TE 1.12	The Applicant	*Removal of Trees and Hedgerows* a) Confirm whether the stage specific Arboricultural Method Statement (AMS) (Commitment C-282) must align with Commitment C-21 to schedule vegetation removal over winter months to avoid the breeding bird season.	The Applicant confirms that commitment C-282 will align with commitment C-21 (both outlined in the **Commitments Register** **[REP1-015]** (updated at Deadline 3)). This is ensured through legal compliance with the Wildlife and Countryside Act 1981 (as amended). This is also secured through Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3) as it will be described within the stage specific Code of Construction Practice documents.
		b) Confirm whether the AMS must align with the recent domestic hedgerow Regulations announced by Defra in March 2024 to include a restriction to remove or cut back hedgerows between 1 March and 31 August to protect nesting birds or other wildlife as per the recent domestic hedgerow Regulations.	The Applicant is currently unclear whether the new regulations will apply to development projects as the consultation was aimed at landowner and farmer management of hedgerows (see Summary of responses and government response, updated 4 March 2024 at Summary of responses and government response – GOV.UK (www.gov.uk)). However, commitment C-21 (in the **Commitments Register** **[REP1-015]** secured through the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) via Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3)) restricts the removal of vegetation in line with the need to ensure legal compliance with the Wildlife and Countryside Act 1981 (as amended).
TE 1.13	The Applicant Horsham DC Natural England The Environment Agency	*Potential Impacts of Haul Roads on Ecology* Provide a response to the concern raised by CowfoldvRampion [REP1-089], Ms Smethurst [REP1-132] and Ms Creaye [REP1-106] regarding the potential impact of the noise from the proposed temporary haul roads to access the proposed cable route, on ecology and wildlife.	The noise generated by vehicles travelling along the haul roads would be akin to farm vehicles (e.g. combine harvesters, tractors, quad bikes etc.) that are already present in the area or other traffic using the A281, A272, Dragon's Lane, Moatfield Lane, Kings Lane and Kent Street. Species of interest in the area such as nightingale and otter are often associated with disturbed areas. For example, nightingale occur in high densities in two different military training areas in Kent and are thriving in large and increasing numbers in the centre of Berlin, Germany, whilst otter have been recorded (amongst many other places) on the Ouseburn in Newcastle upon Tyne, on the River Colne by the M25 and Heathrow Airport and are regularly recorded in Swindon (for example see records on the National Biodiversity Network Gateway - NBN Gateway - National Biodiversity Network). Although most of the fauna present (other than those residing near the A281 or A272) will not have been exposed to high levels of disturbance previously, it would be expected that traffic on the haul road would not be considered a high level of disturbance and would not result in loss of fitness of individual animals associated with low-speed traffic movements (restricted to 10mph). For consideration of the effects of disturbance on individual species or groups of species please refer to Section 22.9 of **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement **[APP-063]**.
TE 1.14	The Applicant	*Legally Protected Species, Including Bats, Hazel Dormouse, Water Vole, Badger, Great Crested Newt and Reptiles*. The Applicant's response [REP2-020] to West Sussex CC's LIR [REP1-054] states that commitment C-208 has been updated [REP1-015]. It is not clear how this commitment has changed. Explain the difference to the previous version and how any changes address West Sussex CC concern.	Commitment C-208 previously stated: "*Pre-construction surveys for reptiles at the location of the substation will be undertaken prior to construction to determine current distribution. Where necessary appropriate mitigation will be implemented to ensure legal compliance. This will include trapping and translocation (within the immediate area). Along the cable route the Ecological Clerk of Works will implement destructive search techniques to avoid the death or injury of individual animals in localised patches of suitable habitat."* Commitment C-208 has been updated and included in the updated **Outline Code of Construction Practice** **[PEPD-033]** submitted at Deadline 3 (text in red) to state: "*Pre-construction surveys for reptiles at the location of the substation will be undertaken prior to construction to determine current distribution. Where necessary appropriate mitigation will be implemented to ensure legal compliance. This will include trapping and translocation (within the immediate area). Within the construction area*

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			the Ecological Clerk of Works will implement destructive search techniques to avoid the death or injury of individual animals in localised patches of suitable habitat." This change has been made to ensure that the commitment explicitly covers all construction activity (including temporary construction compounds, the onshore substation, access works and onshore cable installation) and not just that along the onshore cable route. Commitment C-208 is secured through the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) via Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3).
TE 1.15	The Applicant Natural England	*Hibernating Species* **The Applicant** a) Explain if the pre-construction surveys referred to in commitment C-208 would include areas of over wintering hibernaculum which may be disturbed where hibernating species may be residing over the winter months? b) Explain how hibernating species in construction areas would be protected.	The Ecological Clerk of Works (see commitment C-207 and C-214 in the **Commitments Register** **[REP1-015]** (updated at Deadline 3) secured through the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) via Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3)) would be tasked with implementing the reptile and great crested newt surveys and ensuring that all appropriate mitigation measures will be delivered to ensure legal compliance. This would include appropriate scheduling of vegetation removal (both above ground vegetation and root balls) and other features that could be used by reptiles and amphibians over winter (e.g. log piles, rubble etc.). Clearance of habitats that may support reptiles and great crested newts would be undertaken during the period when reptiles are active and ensure that these areas were devoid of hibernacula during the winter period (secured through Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3) that ensures delivery of stage specific Code of Construction Practice documents).
		Natural England c) Comment on what would comprise adequate mitigation for over wintering hibernaculum?	
TE 1.16	Horsham DC	*Local Plan* Comment on the statement by CowfoldvRampion in their WR [REP1-089 page 114] that: "Horsham District Council's local plan for biodiversity would clearly not support the routing of the cable through the area from the A281 to Oakendene."	
TE 1.17	The Applicant Horsham DC Natural England The Environment Agency	*Species in the Vicinity of the Proposed Substation Location at Oakendene and Cable Route Leading to this Site* In response to concerns raised by CowfoldvRampion in their WR [REP1-089] and Ms Creaye [REP1-106], regarding potential impacts on toad migration, adders, grass snakes and great crested newts in the vicinity of the proposed substation site at Oakendene and cable route leading to this site: **The Applicant**	The Applicant notes that reptiles have been addressed partially within responses to Examining Authority Written Questions **TE 1.14** and **TE 1.15** above. It is further noted that both adder and grass snake are routinely mitigated for on construction sites (including previously for works at the existing National Grid Bolney substation). Potential effects on reptiles within the onshore cable corridor are centred on death or injury of individuals. One of the responsibilities of the Ecological Clerk of Works (see commitment C-207 in the **Commitments Register** **[REP1-015]** (updated at Deadline 3)) will be to ensure legal compliance through hand searches during vegetation clearance and local relocation to suitable habitat. At the onshore substation location at Oakendene, additional habitat will be created in advance of construction to relocate individuals into. Dependent on the results of pre-construction surveys (see commitment C-208 in the **Commitments Register** **[REP1-015]** (updated at Deadline 3) secured through the **Outline Code of Construction Practice (CoCP)** **[PEPD-033]** via Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3)), the need for reptile exclusion fencing will be considered.

Ref	Question To:	Question	Applicant's response
		a) Explain why the Applicant believes the proposed mitigation for potential impacts on these species is adequate.	For great crested newts design led avoidance has ensured that no breeding or other ponds will be lost. The temporary or permanent loss of terrestrial habitat will be compensated for through the Applicant making an application for a district level licence through which strategic habitat creation will take place. Further, commitment C-214 (in the **Commitments Register** **[REP1-015]** secured through the **Outline Code of Construction Practice** **[PEPD-033]** via Requirement 22 of the **Draft Development Consent Order** **[REP2-002]**, updated at Deadline 3) ensures that the Ecological Clerk of Works will be in place to undertake destructive searches during vegetation clearance to reduce the risk of death or injury of individuals. Toads within the working area during vegetation clearance will be managed by the Ecological Clerk of Works as per great crested newts and reptiles. An additional commitment C-295 has been added to the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) to ensure any fauna entering an open excavation will be accounted for. Commitment C-295 states: "*Open excavations left overnight will have a wooden or earth ramp left in place to allow any wildlife accidentally entering a means of escape. In addition, the Ecological Clerk of Works will check open excavations every morning to ensure any trapped fauna (including migrating toads) can be safely removed and relocated*." It should be noted that only short lengths of cable trench are left open at any point, as the laying of ducts and infilling of trenches is completed on a sequential basis. Toads will likely migrate across the haul road at night and will therefore not be at great risk of being subject to traffic collision. However, to ensure any residual risk is adequately managed in the Cowfold area the following commitment (C-296) has been added to the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3): *"During February and March during hours of darkness that coincide with works, access tracks and the haul road between the A281 and A272 will be searched under the supervision of the Ecological Clerk of Works to ensure risks to migrating toads from traffic collision is managed effectively."*
		Horsham DC, Natural England, The Environment Agency b) State whether there are any concerns regarding: i. the outcome of the environmental assessments for these species and ii. the proposed mitigation for potential impacts on these species	
TE 1.18	Natural England	*Protected Species, Great Crested Newt - Baseline Data* The Applicant responded at Deadline 1 to Natural England's concern regarding eDNA for great crested newts having been undertaken outside of the optimal window. Respond to the Applicant's explanation at Deadline 1 [REP1-017, J70] which states that: "Commitment C-214 of	The Applicant recognises that this question is directed at Natural England but notes that the Applicant aims to join the district level licence scheme that is run for West Sussex by NatureSpace. The scheme does not require great crested newt survey data as it is based on a risk mapping process to quantify the level of compensation required. However, the Applicant will provide previous records of great crested newt and those to be collected via commitment C-214 (see **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3)) to help NatureSpace determine the level of compensation required. This information would also be used by the

Ref	Question To:	Question	Applicant's response
		the Commitments Register …[REP1-015]… (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 [PEPD033], Requirement 22 of the Draft Development Consent Order [PEPD-009]." a) Explain whether there are any outstanding concerns in relation to this matter. If so, please provide details. b) Comment on the adequacy of Commitment C-214 and its effectiveness in relation to great crested newts.	Ecological Clerk of Works to ensure local measures can be effectively implemented to avoid death or injury of individual animals.
TE 1.19	Natural England	*Protected Species, Great Crested Newt - Baseline Data* The Applicant responded at Deadline 1 to Natural England's concern regarding eDNA for great crested newts at three waterbodies only, requested consideration of all waterbodies and questioned whether best practice guidelines were adhered to. Provide a response to the Applicant's explanation at Deadline 1 [REP1-017, J73 & J74] which state that: "*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]."* and "*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 [PEPD033], 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*." Explain whether there are any outstanding concerns in relation to this matter. If so, please provide details.	
TE 1.20	The Applicant	*Protected Species - Great Crested Newt Compensation* The Applicant has stated it will apply to join the district level licence scheme in West Sussex for strategic compensation for great crested newts [APP-063]. a)	The Applicant has updated commitment C-214 (see **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3)) to read:

Ref	Question To:	Question	Applicant's response
		Explain what this application depends on. b) How is this secured in the draft DCO [REP2-002].	'*Pre-construction surveys for great crested newts will be undertaken prior to construction to determine current distribution. Where necessary appropriate mitigation will be implemented to ensure legal compliance. This will include avoidance of ponds through C-23, and removal of vegetation under the West Sussex District Level Licensing Scheme administered by NatureSpace (or individual project licence from Natural England if necessary). Along the cable route the Ecological clerk of Works will implement destructive search techniques to avoid the death or injury of individual animals in localised patches of suitable habitat*.' This change has been made to ensure that the approach is adequately secured through Requirement 22 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3). The application for a district level licence will be informed by the detailed design, including distances to ponds from construction works, the extent of temporary and permanent habitat loss, the extent of habitat creation and reinstatement and survey data gathered prior to the application being determined, and that delivered via commitment C-214 (see **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3)).
TE 1.21	The Applicant	*Protected Species – Badger* In response to Written Representations from CowfoldvRampion [REP1-089], Ms Creaye [REP1-106] regarding badgers, explain the procedure to be undertaken and mitigation (Commitment C-209) in the event of discovery of a badger sett in the pathway of the proposed development during construction.	Commitment C-209 (in the **Commitments Register [REP1-015]** (updated at Deadline 3) secured through the **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3) via Requirement 22 of the **Draft Development Consent Order [REP2-002]**) would ensure that any new badger setts will be identified and taken into consideration during the detailed design process. This survey effort would ensure all badger setts (existing and new) within areas of proposed construction and within 50m of them would be identified. In most instances, it would be expected that badger setts would be retained through micro-siting of the Proposed Development. Should works be in close proximity, a temporary closure of a badger sett may be required. In the event that a badger sett is established and cannot be avoided, the first consideration will be what type of sett it is. For outlier and subsidiary badger setts, a licence would be applied for from Natural England to allow for the destruction. Usually, no artificial sett would need to be provided for this action unless survey data (such as camera trapping) reveals that they are particularly active locations. Should a main badger sett or an annex require destruction under licence then an artificial sett would need to be provided. The **Draft Development Consent Order [REP2-002]** (updated at Deadline 3) provides for the powers needed to implement this should it be necessary.
TE 1.22	Natural England	*Protected Species – Badger* Commitment C-209 in the Commitments Register [APP-254] states that: "Pre-construction surveys for badger will be undertaken prior to construction. Where badger setts are located within or close to the working area suitable mitigation, under Rampion 2 Offshore Wind Farm - Examining Authority's Written Questions 66 a development licence from Natural England where necessary, will be delivered under supervision from an Ecological Clerk of Works." Comment on the adequacy of Commitment C-209. If not adequate, provide further details.	The Applicant acknowledges that this is a question for Natural England, but notes that the survey results to date do not demonstrate a need to destroy any badger setts. Therefore, commitment C-209 (see **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3) secured via Requirement 22 within the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3)) is precautionary.
TE 1.23	The Applicant	*Toads* ES Volume 2, Chapter 22: Terrestrial ecology and nature conservation [APP-063] states in section 22.5.59 on page 77 that:	The Applicant refers to the response to the Examining Authority's Written Question **TE 1.17** above. The Applicant does not consider that the risk to the local toad population due to the Proposed Development will be significant. As described in the response to the Examining Authority's Written Question **TE 1.17**, commitments are in place to manage the risk to death or injury of toads. It is noted that toads migrate over roads, railway lines, car parks etc. And therefore, migrating across a haul road or area of disturbed soil will not pose a barrier to

Ref	Question To:	Question	Applicant's response
		"*There are no records of common toad within the proposed DCO Order Limits" and states on page 102 in Table 22-18 that the common toad has been scoped out of the Environmental Assessment as: "although toads are known to be widespread across this area of West Sussex, Rampion 2 will not result in the loss of any ponds and installation of cables will be rapid (150m per day) and Ecological Clerk of Works (EcoW) present minimising the effects of any potential fragmentation of migration routes*." Respond to the WR submitted at Deadline 1 from Cowfoldv Rampion [REP1-089], Ms Creaye [REP1-106] and Ms Smethurst [REP1-132] citing toad migrations across Kent Street and surrounding land in the vicinity of the proposed substation at Oakendene and the land in the vicinity of Crateman's Farm. a) Explain whether this information changes the Applicant's conclusions regarding potential adverse effects on toads. b) Explain the further risk assessments or specialist toad surveys the Applicant plans to undertake in light of this information. c) Explain the specific mitigation measures proposed for toads, particularly during the migration season to prevent being run over by construction vehicles, being trapped in ditches created during construction or other possible hazards.	movement. Toads will likely migrate across the haul road at night and will therefore not be at great risk of being subject to traffic collision. The Applicant does not recognise a need for undertaking specialist toad surveys, as the potential effects can be managed effectively through commitments (particularly commitment C-207 specifying an Ecological Clerk of Works) described within the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) secured via Requirement 22 within the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). Two new commitments (C-295 and C-296) have been added to the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) to ensure that the Ecological Clerk of Works specifically allows for toads: *"Open excavations left overnight will have a wooden or earth ramp left in place to allow any wildlife accidentally entering a means of escape. In addition, the Ecological Clerk of Works will check open excavations every morning to ensure any trapped fauna (including migrating toads) can be safely removed and relocated."* *"During February and March during hours of darkness that coincide with works, access tracks and the haul road between the A281 and A272 will be searched under the supervision of the Ecological Clerk of Works to ensure risks to migrating toads from traffic collision is managed effectively.*"
TE 1.24	Natural England Horsham DC The Environment Agency	*Toads* In light of the evidence submitted at Deadline 1 citing toad migrations across Kent Street and surrounding land in the vicinity of the proposed substation at Oakendene and the land in the vicinity of Crateman's Farm from CowfoldvRampion [REP1-089], Ms Creaye [REP1-106] and Ms Smethurst [REP1-132]: a) Explain whether there are any specific mitigation measures for toads the organisation would expect the Applicant to commit to.	
TE 1.25	The Applicant	*Amberley Mount to Sullington Hill SSSI and Sullington Hill Local Wildlife Site*	The Applicant notes that the proposed DCO Order Limits running along the boundary of the Amberley Mount to Sullington Hill Site of Special Scientific Interest (SSSI) is for operational access only which utilises an existing

Ref	Question To:	Question	Applicant's response
		The Applicant has stated that surface works through the Sullington Hill Local Wildlife Site (LWS) are being avoided through use of a trenchless crossing. However, it is noted that the red line boundary of the Proposed Development runs very close to the boundary of the Amberley Mount to Sullington Hill SSSI and Sullington Hill Local Wildlife Site. a) Explain whether the evidence from the biodiversity audit and natural history training at Sullington Manor Farm in January 2022 [REP1-100], has changed the Applicant's conclusions for scoping out potential impacts of the Proposed Development on Amberley Mount to Sullington Hill from the Ecological Impact Assessment stated in the Environmental Statement - Volume 2 Chapter 22 Terrestrial ecology and nature conservation [APP-063] Table 22-18 page 90, commenting on the citing of various species, particularly a discovery of a single male Theridion familiar spider.	farm track. This is described in paragraph 4.8.19 of **Chapter 4: The Proposed Development, Volume 2** of the Environmental Statement **[APP-045]** as: "*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. The vehicles will gain access using existing field accesses and side accesses as shown on the Onshore Works Plans (Document Reference: 2.2.2) to reach the relevant sections of the onshore cable*."
		b) Provide details of any ecological surveys undertaken in the vicinity of the Proposed Development near the Amberley Mount to Sullington SSSI, their conclusions. c) Explain whether the evidence from the biodiversity audit and natural history training at Sullington Manor Farm in January 2022 mentioned in a) has changed the Applicant's conclusions or driven any proposed mitigations.	This level of use of an existing track used by farm vehicles would not be expected to change the baseline conditions. Therefore, the further information from the biodiversity audit or natural history training provided for Sullington Manor Farm does not alter the mitigation or conclusions drawn regarding the Amberley Mount to Sullington Hill Site of Special Scientific Interest. The Applicant notes that Sullington Hill Local Wildlife Site (LWS) is crossed via trenchless crossing to preserve the chalk grassland and all other habitats in this area affected by construction are intensively farmed. Therefore, the Applicant is content with the embedded environmental measures already in place for this location. Surveys around Sullington Hill LWS include both detailed botanical surveys (see **Appendix 22.4: National Vegetation Classification survey report 2021-2022, Volume 2** of Environmental Statement (ES) **[APP-181]**) and invertebrate survey (**Appendix 22.10: Invertebrate survey report, Volume 2** of the ES **[APP-188]**).
TE 1.26	Natural England Arun DC The Environment Agency SDNPA	*Amberley Mount to Sullington Hill SSSI and Sullington Hill Local Wildlife Site* The Applicant has stated that surface works through the Sullington Hill Local Wildlife Site (LWS) are being avoided through use of a trenchless crossing. Respond, if required, to the decision of the Applicant to scope out the Amberley Mount to Sullington Hill SSSI, particularly in light of the proximity of the Proposed Development red Rampion 2 Offshore Wind Farm - Examining Authority's Written Questions 68 Natural England Arun DC The Environment Agency SDNPA line boundary to the SSSI and/or the evidence submitted into the Examination at Deadline 1 by Grahame Rhone Kittle [REP1-100] including the discovery of a nationality scarce spider.	

Ref	Question To:	Question	Applicant's response
TE 1.27	The Applicant	*Cable Route and Potential Tree Impacts at Coombe Farm, Bob Lane* The Arboricultural Impact Assessment at Coombe Farm, Bob Lane undertaken by Ian Howell from Barton Hyett Associates submitted at Deadline 1 [REP1-066] suggests an alternative cable route within the site to reduce potential impact to the Root Protection Areas of mature English oak and common ash trees. Explain the reason for not pursuing the suggested alternative route.	The alternative onshore cable route proposed by Mr Howell is within the proposed DCO Order Limits and is therefore not considered by the Applicant to be an 'alternative' but a potential micro-siting option within the proposed DCO Order Limits. The Applicant is therefore not at this stage putting forward a case that this route is undeliverable or unsuitable, indeed the Applicant considers there to be merits to the proposed refinement in terms of lesser impacts on tree removal. However, the Applicant is not in a position to refine down the onshore construction corridor for the electrical connection works at this stage. The reasons for this are set out in the **Deadline 1 Submission – 8.24 Applicants Responses to Relevant Representations [REP1-017]**. Table LI15 Applicants Response to Ancleggan Limited [RR-012] under "Consideration of Alternatives, Constraints and National Grid Electricity Transmission (NGET) Grid Connection Agreement and Design work".
TE 1.28	The Applicant The Environment Agency Natural England Relevant Planning Authorities SDNPA	*Potential Terrestrial Ecological Impact* **The Applicant** a) The ExA requests the Applicant to state the estimated worst case duration range for construction activities for: i. a 1 kilometre (km) length of open cut cable corridor ii. a trenchless crossing of a watercourse, PRoW or small track	The average rate of cable duct installation is stated in **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement **[APP-063]** as approximately 150 m per day and installation of duct blocks within a watercourse crossing being up to approximately 48 hours (the length of time during which temporary dams would need to be in place). However, the time to complete all works within a particular section will change dependent on location specific elements including number of field drains crossed, utility corridors, hedgerow crossings, potential seasonal restrictions imposed on construction activities, road crossings, number of trenchless crossings etc. There are several elements that will need to be completed in each section, these maybe separated by weeks or months meaning that although a working area remains fenced activity within it will largely be sporadic. Initially enabling works including ecological surveys, archaeological trial trenching and ground investigation would take place to inform the detailed design process. Following completion of the detailed design (including agreeing various control documents with the relevant local authorities), preparation works would begin which would include erection of fencing, removal of vegetation and creation of haul roads and compounds. Following this installation of transmission cables would begin including the burying of the ducts, creation of joint bays etc. These trenches would be backfilled progressively so that any open excavations present overnight are minimised. Once the ducts and joint bays are in place cabling would be delivered and then pulled through the ducts. Finally, the cables would be tested for faults prior to the section being demobilised and reinstated. The length of each section of cabling that will make up a specific stage is not yet known as it will be determined by the Engineering, Procurement and Construction (EPC) contractor. Trenchless crossing of a watercourse is likely to be a more involved part of the onshore cable construction, with significant time required to establish trenchless crossing compound in preparation for the works. The duration of the crossing is very dependent on the final crossing design. A guideline estimate is that such crossings would require approximately 3 to 4 months for the crossing construction (excluding cable pulling). Trenchless crossings of PRoW or small tracks may be completed quicker, depending on the location specific requirements of these crossings similar to the influencing aspects in the response given above.
		b) The ExA requests the Applicant to provide worst case construction duration times marked on a plan in sections along the whole of the cable route, in as much detail as possible. For sections where the time of year construction is undertaken would be a significant consideration, such as sensitive ecological areas, mark on the plan which months or season the construction work is proposed to be undertaken.	Figure can be found in **Appendix G TE: Seasonal restrictions for construction due to terrestrial ecology commitments** (of this document).

Ref	Question To:	Question	Applicant's response
		The Environment Agency, Natural England, Relevant Planning Authorities, SDNPA c) In addition to the Commitment made to seasonal restriction of construction work at Climping Beach (C-217), comment on whether there are any other sensitive areas within the onshore section of the Proposed Development where a seasonal restriction on construction work is required from an ecological perspective.	The Applicant recognises that part c) of this question is directed at The Environment Agency, Natural England, Relevant Planning Authorities and the South Downs National Park Authority (SDNPA) but notes that in addition to commitment C-217, the Applicant notes that commitment C-117 provides for a seasonal restriction to works within flood zones 2 and 3. Commitment C-203 imposes potential seasonal restrictions dependent on the occurrence of ground nesting birds and commitment C-21 is a tacit seasonal restriction for other breeding birds. All of these commitments are secured through Requirement 22 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3).
TE 1.29	Natural England	*Application of the Mitigation Hierarchy at Climping SSSI* Comment on the Applicant's response at Deadline 1 [REP1-017, J49] to Natural England's relevant representation [RR-265] that the mitigation hierarchy should be followed at Climping Beach SSSI. Specifically comment on: a) Whether the mitigation hierarchy has been adequately followed by the Applicant at this location b) Natural England's latest position on the Applicant's explanation for landfall works at this site and mitigation plans. c) Whether further discussions with the applicant are ongoing. d) Whether there is a change to Natural England's categorisation of this concern as 'red'	The Applicant acknowledges that this question is directed at Natural England. However, it is noted that a further new commitment (C-292 secured through the **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3) via Requirement 22 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3)) ensures that during detailed design of the landfall the mitigation hierarchy will continue to be applied. This ensures that in the first instance avoidance of the Climping Beach SSSI will be evaluated. The commitment C-292 states "*During detailed design the mitigation hierarchy will be applied to avoid losses of key habitats (e.g. woodland, hedgerows, scrub, watercourses and semi-improved grassland) where possible, and where not to minimise losses and mitigate for them. At each crossing of sensitive habitats the Ecological Clerk of Works will provide advice to the design engineers with justification of approach provided. The approach at individual crossings will be detailed in the relevant stage specific Code of Construction Practice*."
TE 1.30	Natural England The Environment Agency SNDPA West Sussex CC Forestry Commission Horsham DC Arun DC	*Impacts to Ecologically Important and Sensitive Sites: Climping Beach SSSI, Littlehampton Golf Course and Atherington Beach LWS, Sullington Hill LWS, and Ancient Woodland at Michelgrove Park and Calcot Wood.* Requirements 22 and 23 of the draft DCO [REP2-002] secure a CoCP and onshore Construction Method Statement. The onshore Construction Method Statement (at 2b) restricts access within these sensitive sites. Provide a response to these proposed Requirements, stating any outstanding concerns.	
TE 1.31	Natural England The Forestry Commission The Woodland Trust SDNPA	*Applicant's Approach to Hedge Notching* The Applicant has provided further justification of its proposed hedge notching technique in responses to SNDPA in their PADS [AS-006] and WR [REP1-052], and West Sussex CC's LIR [REP1-054]. West Sussex CC commented in their LIR submitted at Deadline 2 [REP1-054] that:	

Ref	Question To:	Question	Applicant's response
		"*Although WSCC has concerns about the success of hedgerow 'notching', it recognises that this technique does offer some advantages and therefore is worth attempting provided any necessary remedial measures, such as re-stocking, are implemented immediately*." Provide an updated response to the Applicant's proposed hedge noting technique, specifically stating whether there is agreement between the parties or any ongoing areas of disagreement or concern.	
TE 1.32	The Applicant	*Delivery of Hedgerow Units* Respond to the point made by Natural England in their Relevant Representation [RR-265] which states: "To reduce impact of severance, delivery of hedgerow units should be located in close proximity to the hedgerows which are to be temporarily and permanently lost."	Hedgerows, other than those permanently lost at the onshore substation location at Oakendene will be reinstated. Commitment C-115 limits losses in most locations to allow for gaps small enough to be passable by bats. Prior to reinstatement commitment C-291 seeks to ensure connectivity is maintained through use of imported material (e.g. straw bales) to physically fill the gaps. The Applicant notes that locations of new hedgerows delivered via the criteria laid out in **Appendix 22.15: Biodiversity Net Gain Information, Volume 4** of the Environmental Statement **[APP-193]** (updated at Deadline 3) will be largely delivered in advance of construction and in locations as close as possible to the proposed DCO Order Limits. The Biodiversity Net Gain strategy is secured through Requirement 14 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3).
TE 1.33	The Applicant The Environment Agency Local Authorities	*Stage Specific Landscape and Ecological Management Plans (LEMPs)* The Applicant has stated in the OLEMP [APP-232] that: "*stage specific LEMPs will be produced by the appointed Contractor(s) following the grant of the Development Consent Order (DCO) and prior to the relevant stage of construction. This will be produced in accordance with this Outline LEMP for approval of the relevant planning authority, prior to the commencement of that stage of works. The stage specific LEMPs for the onshore substation and National Grid Bolney substation extension works shall be developed and submitted for approval alongside the detailed design of this infrastructure*." **Applicant** a) If a significant period elapses between the surveys undertaken for protected species and the start of construction, explain whether it is the intention to re-survey features prior to construction and would the findings be included in the updated stage specific Landscape and Ecological Management Plans.	Habitat surveys of the whole of the proposed working area will be undertaken to inform the detailed design and accompanying Biodiversity Net Gain Calculations (see **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3)). Surveys for reptiles (commitment C-208), badgers (commitment C-209), water vole and otter (commitment C-210), bats (commitment C-211), great crested newts (commitment C-214) and hazel dormouse (commitment C-232) are all committed to and secured through stage specific Codes of Construction Practice secured in Requirement 22 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3). These surveys would be used to inform the detailed design process to ensure the mitigation hierarchy continues to be applied (see commitment C-292) and this would include elements of stage specific Landscape and Ecological Management Plans (secured by Requirements 12 and 13 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3)). The surveys would be planned based on a high-level construction schedule to ensure that the information collected were up to date and in line with CIEEM "Advice note on the lifespan of ecological reports and surveys" (available at Advice note on the Lifespan of Ecological Reports and Surveys | CIEEM)

Ref	Question To:	Question	Applicant's response
		The Environment Agency and Relevant Planning Authorities b) Comment, if required, on the approach put forward by the Applicant regarding the stage specific LEMPs. Explain if concerns remain and what approach is recommended. c) Comment, if required, on the durations between surveys and construction.	
TE 1.34	The Environment Agency	*Contaminated Land* The Environment Agency has noted in its RR [RR-116] that the desk study identified there may be some hotspots of contamination and that these should be appropriately managed and investigated to ensure no risk to any controlled water receptors. The Applicant's response to this point [REP1-017] states that 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] would 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 would be secured through Requirement 25(1) of the draft DCO [PEPD-009]. Is the Environment Agency satisfied with this response and specifically the Applicant's approach to securing management of this risk in the draft DCO?	
TE 1.35	Natural England	*Reinstatement of Agricultural Land Commitment C-7* The Applicant amended the wording for Commitment C-7 relating to the reinstatement of agricultural land for the Deadline 1 submission [REP1-015]. Confirm if this is now deemed to be satisfactory and if not, comment on the wording of this Commitment.	
TE 1.36	Natural England	*Soils and Agriculture* Respond to the Applicant's submission at Deadline 1 [REP1-017] to the RR [RR-265] on the following stated concerns: a) Subsoil reinstatement b) Soil stockpiles and storage c) Use of machinery	

Ref	Question To:	Question	Applicant's response
		d) Soil Management Plan e) Soil handling f) Soil and land classification survey to better determine percentage of Best Most Versatile agricultural land.	
TE 1.37	The Applicant	*Calcareous Grassland* Natural England have raised a concern in their Risk and Issues log at Deadline 2 [REP2-041] that reinstatement of calcareous grassland could prove challenging at certain times of year. Explain which Commitment(s) in the Commitments Register [REP1-015] address concerns regarding: a) Timing and duration of storage of the seedbank stockpile b) Seasonal timing of remediation for calcareous grassland c) Frequency of monitoring and watering of reinstated calcareous grassland	No calcareous grassland is expected to be temporarily or permanently lost as part of the Proposed Development. The calcareous grassland present within the proposed DCO Order Limits is crossed by trenchless crossing at Sullington Hill Local Wildlife Site and therefore will not require reinstatement.

Table 2-19 Water Environment

Ref	Question To:	Question	Applicant's Response
WE 1.1	The Applicant	*Water Neutrality* The Applicant confirmed in its response [REP1-017] to Natural England's RR [RR-265], that no mains water would be used for the construction and operation of the Proposed Development and instead water would be imported for construction, operation and emergency use, such as fire suppression systems. a) Confirm if the imported water would be sourced from outside the Sussex North Water Supply Zone. If so, explain how this commitment would be secured.	*Water Neutrality* The Applicant notes that its position expressed in the response to Natural England's Relevant Representation **[RR-225]** in Table 4-15 (J10) within **Deadline 1 Submission – 8.24 Applicant's Responses to Relevant Representations [REP1-017**] has been slightly misinterpreted. For the purposes of clarification, the proposed construction and operational water usage are outlined separately below: Construction phase: The Applicant confirms that no mains water would be required for construction activities in the Sussex North Water Zone. Mains water for construction remains an option out with the Sussex North Water Zone. Operation and maintenance phase: It has been confirmed that there are certain operation and maintenance phase activities (such as emergency fire suppression and potable water use) which would not require mains supply as the water can be imported (e.g. via water tanks and dispensers) respectively. There are several other activities such as toilet, faucet and shower use which could come from a range of sources (including mains water and / or off-site imports). As noted in the Applicant's response to Horsham District Council (HDC) Local Impact Report (LIR) in Table 2-1 (9.21) within **Deadline 2 Submission – 8.45 Category 8: Examination Documents – Applicant's Responses to Horsham District Council Deadline 1 Submissions [REP2-022]**, one possible mitigation route for any small amount of mains water (from toilet, shower and faucet use) is the Sussex North Offsetting Water Scheme (SNOWS) endorsed by Natural England. The SNOWS is currently in development (with a dedicated HDC local authority delegate) to help improve the efficiency of appliances / devices in the Sussex North Water Supply Zone and reduce regional water use. As noted in paragraph 26.7.10 of **Chapter 26: Water environment, Volume 2** of the Environmental Statement (ES) **[APP-067]**, in the unlikely event of the strategic scheme not being available on time then other options could also 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). In terms of the specific Examining Authority's questions the Applicant responds as follows: a) The Applicant can confirm that all imported water would be sourced from outside the Sussex North Water Supply Zone. Dedicated multi-tiered commitments in relation to water neutrality (for the operational and maintenance phase) are set out within Section 26.7 of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**. This commitment and the supporting embedded mitigation measure (commitment C-260 of the **Commitments Register [REP1-015]** (updated at Deadline 3)) are secured by the design principles of the **Design Access Statement [AS-003]** (updated at Deadline 3) and Requirement 8 (2) and (3) in the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3). In terms of the construction phase, a new commitment C-290 set out in the **Outline Code of Construction Practice [PEPD-033]** (updated at Deadline 3) states that: *"In relation to water neutrality in the Sussex North Water Resource Zone, construction water usage will not be taken from the mains, and it will instead be imported from outside of the Sussex North Water Resource Zone (via tankers) to main compounds (for their welfare facilities and wheel washing) and Trenchless Crossing (TC) compounds (for their welfare facilities, use in horizontal directional drilling (HDD) drilling fluids, batching of cement bound sand or concrete, wheel washing and dust suppression)."* This commitment has been provided to secure what has previously been communicated by the Applicant throughout the DCO Application and Examination phase, and it is secured by the implementation of the stage-specific Code of

Ref	Question To:	Question	Applicant's Response
			Construction Practice (CoCP) via Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). In terms of the operation and maintenance phase water requirements, these are set out under Section 3.2 Design Principles of the **Design and Access Statement** **[AS-003]** (which has been updated as part of Table 3-4 at Deadline 3). This is secured via Requirement 8 (2) and (3) under 'Detailed Design approval for the onshore substation' in the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3).
		b) Explain what method of transport would be used to bring the water to site.	b) Water would require to be delivered to site by tankers. A typical example of a tanker is illustrated below. 
		c) If the water would be transported by vehicles, **confirm the volume of water required for construction and operation,** the size of the vehicles that would be used to transport the water, the number of vehicle movements, the locations of these vehicle movements and whether these vehicle movements have been included in the traffic and transport impact assessment.	c) The volume of water for construction would vary depending on the final design of the Proposed Development and the types of technology deployed. These would be determined during the detailed design phase and within the agreed methodology. Where possible, water-saving methods would be explored and would need to be considered by the Contractor. A high-level estimate of the expected volumes for the main construction and operational phases is provided below. **Construction phase:** It has been estimated that a total of up to 75,213m^3 (which is the equivalent to 3,959 no. of 19,000 litres (L) tankers or 2,506 no. of 30,000L tankers) of water would be required during the four-year construction phase of the Proposed Development, both within and outside of the Sussex North Water Supply Zone. This total is broken down into the various construction activities in the table below. The figures are indicative at this stage but provide an expected 'worst case' scenario for the transportation of water, as they assume that the water would be tankered in for all elements of the construction phase across the whole of the Proposed Development. **Indicative total volume estimate over a four-year construction phase**

Ref	Question To:	Question	Applicant's Response

Construction activity	Approximate locations (assumed)	Indicative total volume estimate (m^3)	Indicative estimate of tanker numbers	
			No. of 19m^3 tankers	No. of 30m^3 tankers
Welfare facilities	Main temporary construction compounds	38,870	2,046	1,296
Trenchless crossing drilling (i.e. HDD)	Trenchless crossings	30,817	1,622	1,027
Wheel washing	Main temporary construction compounds and 30% of construction site accesses	1,454	77	48
Batching of cement bound sand or concrete	Main temporary construction compounds	1,718	90	57
Dust Suppression:	Full length of haul road	2,354	124	78
TOTAL		**75,213**	**3,959**	**2,506**

The estimated number of tankers required to support the construction phase of the Proposed Development represent additional construction traffic movements over those assessed within **Chapter 32: ES Addendum, Volume 2** of the Environmental Statement (ES) **[REP1-006]**. It is noted however that the majority of these tanker movements would be spread evenly across the construction phase rather than occur during the peak weeks for construction traffic. The number of tankers generated by the construction phase would also be low, when considered across the construction phase and onshore cable route. Based upon the table above, and assuming use of the smaller 19,000L tankers, the following number of tanker movements would be generated by each construction activity:

- Welfare facilities: three to four tankers per week to each temporary construction compound;
- Trenchless crossings: five tankers per week to each trenchless crossing compound;
- Wheel washing: one tanker every two to three weeks across the onshore cable route;
- Batching of cement bound sand or concrete: one tanker every six to seven weeks to each temporary construction compound; and
- Dust suppression: one tanker every two to three weeks across the onshore cable route.

Based upon these estimates it is not anticipated that the additional movements of water tankers would change the conclusions of **Chapter 32: ES Addendum, Volume 2** of the ES **[REP1-006]** in relation to significant effects on users of the transport network.

Operation and maintenance phase:
The following discussion covers the operation and maintenance phase at the onshore substation at Oakendene.

Ref	Question To:	Question	Applicant's Response

Firstly, consideration is given to how fire suppression water requirements would be addressed:

- Fire suppression tanks (two) would have a combined capacity of approximately 370m^3 and would be delivered to site in the first year, comprising the following:
  - A firefighting tank of approximately 250,000L would be provided in-line with National Grid Technical Specifications (NGTS), to assist the fire brigade in tackling fire outbreaks within the first hour of arriving at site; and
  - An automatic fire suppression tank of approximately 120,000L would also be provided. This suppression system requirement is heavily influenced by the overall building layouts and sizes to be confirmed at final design.

Secondly, in terms of the other water usage on site (including drinking water, toilet, faucet and shower use) this is expected to be very little, given that the onshore substation at Oakendene would typically be unmanned as set out in **Chapter 4: The Proposed Development, Volume 2** of the ES **[APP-045]**. The British Standard for an office with a canteen is 100L per person per day (L/person/d), and the average residential use for a domestic household is around 150L/person/d. A high-level estimate has been assumed between this range, in accordance with the expected uses on-site and available information about typical water demand[3]. Based on a conservative estimate it has been assumed that if five people were to attend site once per week and they would use around 125L/person/d, this would amount to a volume of 32,500L or 32.5m^3 per annum (m^3/a). If they were to attend up to three days per week (which is extremely unlikely) then then this would equate to a volume of 97.5m^3/a.

Note that these estimates represent a worst-case scenario, given that toilet, sink and faucet use could be sourced by other means (i.e. mains sourced and use of the offsetting scheme or off-site imports via other methodologies e.g. pipeline connection from the neighbouring water supply zone) as indicated in the Applicant's response to the Examining Authority's Written Question **WE 1.1 a)** above. The small annual water demand on-site would also be further minimised by the operation of water harvesting or recycling systems which have not been taken account of as part of these initial high-level estimates. The commitment to water harvesting or recycling is set out in commitment C-260 of the **Commitments Register** **[REP1-015]** (updated at Deadline 3) secured by the design principles of the **Design Access Statement** **[AS-003]** (updated at Deadline 3). As such these volumes are likely to represent precautionary 'worst case' scenarios in terms of welfare facility usage. The actual volumes of water for the operational substation would be determined at the detailed design stage in accordance with Requirement 8 (2) and (3) in the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3).

The high-level estimation for the worst-case scenarios of tanker volumes for both fire-fighting and welfare use are provided in the table below.

Operational volume estimates by year (see text above regarding assumptions, alternatives and uncertainties)

[3] Information from the Environment Agency Harvesting rainwater for domestic uses (2010) EA-2010_Harvesting-Rainwater-for-Domestic-Uses_An-Information-Guide.pdf (waterwise.org.uk) provides information on the typical distribution of water uses in a household for the 150L/d domestic estimate. The percentage uses personal washing, toilet flushing and drinking water (miscellaneous use) and dishwashing have all been used as a guide to produce the initial high level conservative estimate.

Ref	Question To:	Question	Applicant's Response

Operational activity	Timing and frequency	Indicative volume estimates (m^3)	Indicative estimate of tanker numbers	
			No. of 19m^3 tankers	No. of 30m^3 tankers
Firefighting				
Firefighting tanks	Year 1 (in 2030) only Delivered once at the start of the operational phase for emergency purposes	370	20	13
Firefighting Totals			20 (2030) 2030 – 2061 (N/A)	13 (2030) 2030 – 2061 (N/A)
Welfare scenario 1: Attendance once per week				
Welfare facilities – worst case (see above – may not need to be tankered in)	Annual (2030 – 2060)	32.5 p/a	2 p/a	2 p/a
Welfare scenario 2: Attendance three times per week				
Welfare facilities – Extreme worst case (see above – may not need to be tankered in)	Annual (2030 – 2060)	97.5 p/a	6 p/a	4 p/a
Combined Totals				
Welfare scenario 1 +Firefighting provision			22 (2030) 2 p/a annually (2031 -2060)	15 (2030) 2 p/a annually (2031 – 2060)
Welfare scenario 2 + Firefighting provision			26 (2030) 6 p/a (2031 – 2060)	17 (2030) 4 p/a (2031 – 2060)

As noted in Table 23-3 of **Chapter 23: Transport, Volume 2** of the ES **[APP-064]**, the operation and maintenance phase of the onshore elements of the Proposed Development were 'scoped out' of the ES on the basis vehicle movements would be occasional and limited in number. Whilst these estimated water tanker movements represent additional vehicles during this phase of the Proposed Development, these movements are relatively low in number and infrequent and would not warrant a re-assessment of environmental effects. This is particularly the case given that the scenarios (1 and 2) outlined above for welfare facilities (between 2030 and 2060) both represent a worst case in terms of tankering requirements. As indicated in the Applicant's response to the Examining Authority's Written Question **WE1.1 a)** it is anticipated that this activity could instead be sourced from the mains (or off-site imports via other means), in combination with water harvesting/recycling measures and the application of the Sussex North Offsetting

Ref	Question To:	Question	Applicant's Response
			Water Scheme (SNOWS). If that was the case, water would only need to be tankered in for the provision of firefighting water in year 1 (2030).
WE 1.2	The Environment Agency	*Risk of Pollution to the River Adur* Confirm whether there are any outstanding concerns regarding the risk of pollution to the River Adur from construction or operation of the Proposed Development.	The Applicant recognises that the Examining Authority's Written Questions **WE1.2** and **WE1.3** are directed at the Environment Agency. However, for information Section 26.3 of **Chapter 26: Water environment, Volume 2** of the Environmental Statement (ES) **[APP-067]** outlines and documents the consultation and engagement held with the Environment Agency throughout the Development Consent Order (DCO) pre-application stage. As part of the pre application stage Evidence Plan Process (see paragraphs 26.3.5 – 26.3.25), six Expert Topic Group (ETG) meetings were held in which the Environment Agency and other stakeholders attended. At the second ETG meeting on 23 March 2021, information was provided in relation to a number of embedded environmental measures that related to watercourse crossing methodologies and pollution prevention (paragraph 26.3.12). During the fourth ETG meeting on 22 November 2022, embedded environmental measures were shared in relation to the aquatic environment including watercourse crossing (commitments C-227, C-176-178, C-229, C-234, C-235, C-236 and C-241) and pollution prevention measures (commitments C-8, C-76, C-149 C-150, C-151 and C-167) as set out in the **Commitments Register** **[REP1-015]** (updated at Deadline 3). The Environment Agency acknowledged these measures as being generally acceptable (paragraph 26.3.21). These measures are presented in Section 5.10 of the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) and are secured as part of the Construction Phase Drainage Plan via Requirement 22 (c) of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3).
WE 1.3	The Environment Agency	*Watercourse Crossings* a) Provide a response to the Applicant's suggested approach to watercourse crossings summarised in its response to the Environment Agency's Relevant Representation on this point [REP1-017, points 2.32.7 and 2.32.8, page 199]. *b)* Confirm whether there any further comments on the proposed crossing type for each crossing location and that the locations would be secured by Requirement 22 in the Draft DCO [REP2-002] as currently worded.	
WE 1.4	The Applicant Arun DC The Environment Agency	*Private Water Supplies* **The Applicant** In response to Arun DC's point 4.14 in its LIR [REP1-039] regarding the monitoring of private water supplies, the Applicant's responses states: "…any additional PWSs identified in the close vicinity of the Proposed Development post-consent will be considered for inclusion in the PWS water quality monitoring programme implemented by environmental measure C-253 in Table 26-20 of Environment Statement Chapter 26: Water environment, Volume 2 of the ES [APP-067] and also the Outline Code of Construction Practice [PEPD-033] secured through Requirement 22 of the Draft Consent Order [PEPD-009]."	a) Following engagement with the relevant Local Planning Authorities, Arun District Council (ADC), Horsham District Council (HDC) and Mid Sussex District Council (MSDC), private water supplies (PWSs) have been identified and are displayed on Figure 26.6 in **Chapter 26: Water environment – Figures (Part 2 of 2), Volume 3** of the Environmental Statement (ES) **[APP-118]** and Figure 26.4.5 in **Appendix 26.4: Hydrogeological Risk Assessment, Volume 4** of the ES **[APP-218]**. PWSs are also listed within Table 2-3 of the **Appendix 26.1: Detailed Water Environment Baseline Report, Volume 4** of the ES **[APP-215]** and Table 3-3 of the **Appendix 26.4: Hydrogeological Risk Assessment, Volume 4** of the ES **[APP-218]**. Both tables contain details of the PWSs and whether there is likely to be a potential hydrogeological connection with the Proposed Development. Commitment C-253 is secured via Requirement 22 (4) (p) 'Water Quality Monitoring Programme' as part of the required content of the stage-specific Code of Construction Practice in the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). As reflected in the wording of commitment C-253 of the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3), there are several PWSs within ADC that are currently considered to be linked conceptually to the Proposed Development. These are P2 Brookbarn Farm, P5 Suzy Smith Racing / Angmering Park Estate and P24 Michelgrove. As noted in Table 2-3 of the **Appendix 26.1: Detailed Water Environment Baseline Report, Volume 4** of the ES **[APP-215]** the grounds for their inclusion in the PWS monitoring programme are as follows: • P2 is situated approximately 53m beyond the proposed DCO Order Limits and within the same geology;

Ref	Question To:	Question	Applicant's Response
		a) The ExA would like to further understand on what basis these water supplies would be considered for inclusion in the water quality monitoring programme.	• P5 is situated approximately 500m beyond the proposed DCO Order Limits but within the same geology and also down hydraulic gradient in a valley where there is superficial clay with flints deposits; and • P24 is approximately 250m beyond the proposed DCO Order Limits. It is also within the same geology as a proposed minor road upgrade and within a valley and 340m downgradient of a proposed trenchless crossing. There are two other PWSs that are situated less than 250m beyond the proposed DCO Order Limits but not mentioned in the wording of commitment C-253 for inclusion in PWS monitoring due to their lack of hydrogeological connectivity with the Proposed Development: • Pauls House (P3) is approximately 200m beyond the proposed DCO Order Limits, but groundwater flow is considered to flow predominantly to the south and south west away from the PWS and into the Black Ditch and River Arun tributaries; and • The Decoy (P4) is approximately 150m beyond the proposed DCO Order Limits, however the borehole is located on the Lambeth Group geology and these low permeability strata above the Chalk aquifer are likely to be of significant thickness at trenchless crossing locations and a barrier to potential connectivity. In accordance with Commitment C-253 which is secured through the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) via Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3), water quality monitoring would be carried out at P2, P5 and P24 which are all situated within the ADC local authority area. Further details of the monitoring regime would be discussed and agreed with ADC at the post-DCO stage. At the post-DCO consent stage, a check of the latest PWS data would also be carried out via engagement with ADC. In the unlikely event that any additional PWSs are identified less than 250m of the proposed DCO Order Limits (or others which are considered to be potentially hydraulically at risk) then they would also be considered for inclusion in the PWS water quality monitoring programme. This would involve a similar screening exercise to the one carried out at the DCO Application stage to understand if there is a degree of hydrogeological connectivity between the PWS source and the Proposed Development, taking into account the prevailing local topographic, geological and hydrological conditions. Those PWSs that are identified as being conceptually linked to the Proposed Development would be added to the monitoring programme. This is secured through the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) via Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3).
		b) Quantitatively define the phrases "in close vicinity of the Proposed Development" mentioned above and "in proximity of the Order Limits" in Commitment C-253 of the Commitments Register [REP1-015].	b) During its Section 42 response within the first Statutory Consultation Exercise (July to September 2021), the Environment Agency suggested that 50m was to be implemented as a default Inner Source Protection Zone (SPZ1) and 250m was to be implemented as a default Outer Source Protection Zone (SPZ2) when determining the route of the onshore cable corridor during the design evolution phase. The aim of this zoning was to minimise interception of these zones by the Proposed Development. On this basis, 250m is considered to be an appropriate distance from the proposed Order Limits and Proposed Development at which the Applicant would carry out a review of private water supply (PWS) information post-DCO consent. This would be secured through the **Outline Code of Construction Practice** **[PEPD-033]** (updated at Deadline 3) via Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3).
		c) Confirm that Commitment C-253 of the Commitments Register includes both microbial and chemical parameters within the water quality monitoring programme.	c) Further details of the monitoring regime and analytical suites for private water supply (PWS) monitoring would be discussed and agreed with Arun District Council (ADC). The suite would be informed by the Drinking Water Standards

Ref	Question To:	Question	Applicant's Response
			and Regulations[4] and the Applicant can confirm that it would cover various microbial and chemical parameters. These would be selected to reflect the type of construction works in the respective PWS catchments.
		d) Confirm how long the water quality monitoring programme would continue for.	d) The duration of the private water supply (PWS) monitoring would be discussed and agreed with Arun District Council (ADC) to inform the monitoring and results provided. The stage-specific Code of Construction Practice (CoCP) would include the water quality monitoring programme during the works in accordance with Requirement 22 (4) (p) of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). It is expected that the following phases of monitoring would be undertaken: • approximately 6-12 months of monitoring, which would help establish an appropriate 'baseline' covering natural seasonal fluctuations in water quality; • a period of targeted construction monitoring throughout the period of intrusive construction works (e.g. soil stripping, trenchless crossings, open cut trenching) within each respective contributing catchment. This would be tailored to the detailed construction programme in the vicinity of each PWS being monitored and provided in the stage specific CoCP in accordance with Requirement 22 (4) (p) of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3); and a minimum of three months of monitoring following reinstatement in the PWS catchment to allow for any delayed potential effects of the construction of the Proposed Development. It is envisaged that this would be sufficient following the successful implementation of embedded environmental measures (e.g. commitments C-19, C-21 and C-27 Reinstatement and commitments C-76, C-227, C-234 – C-236 and C-133 Pollution Prevention which are set out in the **Commitments Register** **[REP1-015]** (updated at Deadline 3)) and secured via Requirement 22 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3).
		Arun DC, The Environment Agency e) Explain what distance would be considered appropriate for the definition of "in proximity of the Order Limits" in Commitment C-253 of the Commitments Register. f) Explain whether all private and public water supplies meeting this definition, should be included in the water quality monitoring programme as default, unless agreed exempt by the Appropriate Authority.	

[4] Drinking Water Standards and Regulations - Drinking Water Inspectorate (dwi.gov.uk)

Table 2-20 Fish and Shellfish

Ref	Question To:	Question	Applicant's Response
FS 1.1	The Applicant	*Marine Conservation Zone (MCZ) Impacts* There remains continued disagreement between NE and the Applicant over the likely effects on black seabream as a consequence of piling noise during the construction phase, and whether such effects would hinder the achievement of the conservation objectives stated for the Kingmere MCZ. On this basis, and without prejudice, with regard to the Marine and Coastal Access Act 2009 the Applicant is required to submit potential options for a Measure of Equivalent Environmental Benefit (MEEB) to be assessed.	The Applicant will respond to this question at Deadline 4.
FS 1.2	Natural England	*Seasonal Restriction* Based on the noise thresholds, Natural England advice, and the proximity of the proposed array areas to Kingmere MCZ, explain the possibility that there could be any piling within the months of March to July inclusive without the likely hindering of achieving the conservation objectives of this MCZ.	
FS 1.3	The Applicant	*Noise Abatement Measures* The Applicant has stated that it is undertaking additional work to provide a comparison of the environmental conditions at the Proposed Development with other projects where Noise Abatement Systems have been deployed, and this will be submitted to the Examination in due course [REP1-107 Page 257]. Explain what information is likely to be received and when. This should include a minimum decibel level reduction expected for each noise abatement method for the Rampion 2 site and offshore environment.	The Applicant will submit additional information to the Examination at Deadline 4. This will include a review of the commercially available noise abatement technology, referenced to publicly available information on the effectiveness of known applications in other markets including Germany. Information will also be provided on the emerging policy being developed by the Department for Environment, Food and Rural Affairs (Defra) in order to reduce environmental impact from subsea noise whilst enabling projects to still be delivered without onerous seasonal restrictions which would otherwise make them impractical to construct.
FS 1.4	The Applicant Natural England MMO	*Noise Thresholds for Black Seabream* Natural England does not support the use of 141 decibels (dB) re 1 micropascal (uPa) Sound Exposure Level – Single Strike (SELss) as a threshold for black seabream behavioural disturbance and does not agree that the threshold is highly precautionary [REP1-059a, Point E34]. Explain whether there are any other species that could be used as a proxy for black seabream in these circumstances that could be agreed on by all parties. If so, this should be put forward to the Examination at Deadline 3.	A thorough review of available literature and data was undertaken by the Applicant, and, having identified no species-specific information for black seabream, the literature review was continued to identify a suitable proxy species to further evidence the likely responses of black seabream to noise emissions. Seabass were identified as a suitable proxy species due to being morphologically similar to black seabream, at an equivalent life stage to the nesting black seabream. Red seabream were also identified as being a suitable proxy species, due to being in the same family as black seabream (Sparidae), and being in the same hearing category, (categories as defined by Popper et al. (2014)). Sprat are suggested as a suitable proxy by Natural England and the Marine Management Organisation (MMO), based on a study by Hawkins et al. (2014), which recorded initial responses of the species at 135 dB SELss. The Applicant does not support the use of this species as proxy, as sprat have a greater hearing capability and higher sensitivity (Group 4 receptor (Popper et al., 2014)) to underwater noise than black seabream (Group 3 receptor), and are therefore expected to have a much increased reaction to any noise stimulus. In addition, the threshold (135 dB SELss) is based on a startle response of sprat

Ref	Question To:	Question	Applicant's Response
			which are not involved in any particular activity (i.e. not spawning), and located in quiet loch. 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 would reasonably be expected to be accustomed to higher levels of noise and would thus have a correspondingly lower sensitivity to disturbance. The MMO have highlighted a study by Kastelein et al. (2017), which reported a 50% initial startle response (sudden short-lived changes in swimming speed) which occurred at an SELss of 131 dB re 1 mPa2 s for 31 cm seabass and 141 dB re 1 mPa2 s for 44 cm seabass. Of these thresholds, the MMO have suggested the application of the 131 dB re 1 mPa2 s threshold to inform the impact assessment on nesting black seabream. The Applicant however, is confident that a threshold of 141 dB re 1 mPa2 (as based on seabass as proxy) is more appropriate. As reported by Kastelein et al. (2017), the thresholds are based on startle responses of seabass, which could be a brief change in swimming speed, direction, or body posture, in at least one of a group of four fish, with a very limited time duration, as opposed to a full abandonment of the ensonified area. Furthermore, 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 166 dB 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 Applicant therefore suggests the use of the disturbance threshold of 141 dB SELss (based on 44 cm seabass, as reported in Kastelien et al. (2017)) as suitably precautionary for an impact assessment on nesting black seabream. This is as the observed effects from underwater noise from pile driving on seabass were so minor (no sustained responses observed), there are unlikely to be any adverse effects on their ecology (such as sustained disturbance to nesting behaviours). Therefore, this noise level is not considered to have any potential to trigger a significant effect on the black bream population within the Marine Conservation Zone (MCZ) and nor is it even likely to have an individual effect on breeding success. As the Applicant has proposed, the 141dB SELss limit, as based on seabass as a proxy, would be the maximum at the boundary of the Kingmere MCZ, and only at the maximum blow energy, no feature of the MCZ would even be expected to be exposed to this level of impact and therefore it remains conservative and sufficient to ensure no significant effects to the black bream feature of the MCZ. The Applicant would be happy to consider an alternative proxy but is not aware (following the comprehensive literature review) of an alternative proxy species (other than those already presented) which offers the same level of similarity to black seabream, i.e. same physiology and hearing capability (which comprise the critical attributes). Whilst the breeding habit differs between seabass and black seabream, the sensitivity of the fish to noise stimuli is physiologically derived, and therefore this proxy species as suggested by the Applicant is considered appropriate for the purposes of defining black bream noise response.
FS 1.5	The Applicant	*Noise Thresholds for Black Seabream* The MMO suggests a threshold of 135db SELss is used (as per Hawkins et al, 2014) for the reasons set out in section 7.1.6 [REP2-035]. Please respond to the MMO comments in this section of their submission. Furthermore, if this threshold was adopted by the Applicant, please set out how that would affect mitigation such as zoning of piling, using diagrams where possible.	The Applicant directs the Examining Authority to **Appendix H FS: Noise Thresholds for Black Seabream** (of this document) where this is addressed.

Ref	Question To:	Question	Applicant's Response
FS 1.6	The Applicant	*Black Seabream Noise Acclimatisation* Natural England state [REP1-059, Point E31] that the concept of black seabream acclimatising to noise would not be appropriate in this circumstance due to the time taken for this fish to acclimatise, which could impact the breeding success. Provide a response.	The Applicant would like to highlight to the Examining Authority and Natural England that various measures of precaution have been applied when informing appropriate mitigation for black seabream. Furthermore, as detailed in the **In Principle Sensitive Features Mitigation Plan** **[REP1-012]** (updated at Deadline 3), a precautionary disturbance threshold has been applied (141dB SELss), based on an initial response of sea bass, which was not sustained, and thus this issue is explicitly considered. As detailed by Popper et al., (2014), '*effects on behaviour refer to substantial changes in behaviour for a large proportion of the animals exposed to a sound. This may include long-term changes in behaviour and distribution, including moving from preferred sites for feeding and reproduction, or alteration of migration* *patterns. This behavioural criterion does not include effects on single animals or small changes in behaviour such as a startle response or minor movements*'. Therefore, the use of the 141dB SELss disturbance threshold, based on a startle response, is inherently precautionary. In addition, due to the intermittent nature of piling operations, no sustained behavioural responses will occur, with any effects therefore likely to be temporary. As detailed in the **Chapter 8: Fish and shellfish ecology, Volume 2** of the Environmental Statement **[APP-049]**, evidence has shown the potential for fish receptors to habituate to repeated sound exposure. Anderson et al. (2011) reported a subsidence in behavioural responses of lined seahorse, after a week of exposure to loud ambient noise levels (123.3 ± 1.0 dB SPL). Neo et al. (2018) reported evidence of habituation of seabass to recordings of pile driving and seismic surveys over a 12-week period. There is therefore the potential for acclimatisation of seabream to repeated sound exposure, although the Applicant acknowledges that this will occur over time. Therefore, taking into account the precautionary disturbance threshold, the implementation of proposed mitigation measures (including noise abatement measures, seasonal restrictions and zoning), and the potential for acclimatisation to underwater noise, the Applicant is confident that there will be no wider effects on black seabream as a feature of the Kingmere Marine Conservation Zone.
FS 1.7	The Applicant	*July Seabream Nesting* Whilst the Applicant has submitted evidence that July had fewer active nests than previous months when surveyed, NE do not agree that this difference constitutes evidence that July is not important to black seabream nesting. NE state that it is thought possible that later spawning could be an important 'last attempt' if spawning has been unsuccessful earlier in the season. NE advise that July should be considered equally important in line with the conservation advice [REP2-041, Point E70]. Provide a response. Furthermore, consider whether it could be the case that seasonal variability would mean greater number of active black seabream nests in future July months.	The Applicant maintains their position that a full piling restriction from 1 March to 31 July is disproportionate to the risk of an impact arising that could result in significant population level effects on nesting black bream. This is due to the reduced spawning/nesting activity during July, when compared to March-June in the same year (as evidenced in a 2020 aggregates survey), therefore a lesser impact on the population breeding success in July is anticipated (as set out in **Chapter 8: Fish and shellfish ecology, Volume 2** of the Environmental Statement **[APP-049]**). Acknowledging that some nesting is still potentially occurring in July (as evidenced by Natural England), the **In Principle Sensitive Features Mitigation Plan** **[REP1-012]** (updated at Deadline 3), the provision of which is secured in Condition 11(1)(k) of the deemed Marine Licences (dMLs) (Schedules 11 and 12 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3) sets out multiple mitigation measures during the month of July; these include the combination of a low noise hammer technology and bubble curtains, and a sequencing approach to piling starting in locations furthest from the Marine Conservation Zone (MCZ). Through July, piling will still be undertaken in the eastern part of the array. As set out in the **In Principle Sensitive Features Mitigation Plan** **[REP1-012]** (updated at Deadline 3), and secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3)), from March to June piling will only be undertaken

Ref	Question To:	Question	Applicant's Response
			in the eastern part of the offshore Array area, and subject to mitigation using the combination of a low noise hammer technology and double big bubble curtains (DBBC). Through the application of a variety of mitigation measures, which will be secured through implementation of an approved Sensitive Features Mitigation Plan, the Applicant is confident that piling operations will not hinder the Kingmere Marine Conservation Zone's conservation objectives. The Applicant reiterates that a full piling exclusion from March-July inclusive would also have significant issues for the practical development of the Proposed Development. The Applicant is in agreement with Natural England, regarding the inter-annual variability in the exact timings of arrival and nesting, as detailed in Q10-1 of Deadline 2 Submission – Natural England's Response to the Examining Authority's Written Questions arising out of Issue Specific Hearing 1 on Environmental Matters **[REP2-040]**. The Applicant reiterates, that the factors that can influence this variability are not well understood, and may include: water temperature, light penetration, day length, moon phase, plankton composition, the co-occurrence of neighbouring nests, and storm events, many of which can vary considerably in any given year and are not readily predictable in advance. The Applicant cannot therefore speculate whether there could be a greater number of active black seabream nests in future July months.
FS 1.8	Natural England	*Nesting Season Changes* Explain why the conservation advice was changed in 2021 to include the months of March and July to the nesting season for black seabream at Kingmere MCZ. Set out what evidence was this based on.	
FS 1.9	Natural England MMO	*Piling Noise – Background Noise* The Applicant has stated that as the presence of the noise at the threshold level would be limited in time and location, then for most of the time and place within the Kingmere MCZ, the noise would not be far in excess of noise that is already present at this site [REP2-026, Point E13, Page 102]. Provide a response on whether this is an agreed matter.	
FS 1.10	Natural England MMO	*Rampion Impacts on Black Seabream* The Applicant stated that R1 did not identify any adverse population effects on black seabream following construction, with the surveys showing an increase between pre- and post-construction surveys [REP2-026, Point E15, Page 104]. Provide a response on whether this is an agreed matter. Furthermore, if you agree this evidence is accurate, explain whether this suggests that the impact of piling to black seabream during July would not result in significant effects, given that there was piling in July with the Rampion 1 development?	The Applicant directs the Examining Authority to their response to Point E15, in **Deadline 2 Submission – 8.49 Category 8: Examination Documents – Applicant's Response to Prescribed Consultees' Written Representations** **[REP2-026]**.
FS 1.11	Natural England	*Minimum Noise Abatement Level*	

Ref	Question To:	Question	Applicant's Response
		Within the Applicant's document "Further information for Action Points 38 and 39 – Underwater Noise" [REP1-020] it uses what it considers to be the minimum noise abatement offered by the proposed mitigation. This is a 6dB reduction based on a low noise hammer. Explain whether this is a reasonable minimum and if so, does this satisfy the concern that there would be no 'recoverable' impacts to black seabream [REP1-020, Figures 6-1 and 6-2].	
FS 1.12	The Applicant	*Black Seabream Datasets* The Applicant has stated that it is in discussions to potentially purchase additional black seabream datasets [REP1-017, Page 287]. Provide an update on this matter and when the additional datasets could be submitted for the Examination. Explain whether the information in the datasets would affect the conclusions of the ES or mitigation measures.	The Applicant does not intend to purchase additional black seabream datasets prior to the grant of consent, as the addition of more recent datasets would not alter the conclusions of the assessment in **Chapter 8: Fish and shellfish ecology, Volume 2** of the Environmental Statement **[APP-049]** or the mitigation being proposed. As there is interannual variability in the density and position of black seabream nesting sites, additional datasets will be relevant for the purposes of micrositing. As such, the Applicant will purchase the most recent datasets at the time that pre-construction surveys are being completed. Natural England agreed with this approach in principle in a meeting with the Applicant on 8 March 2024. The Applicant also refers to the Marine Management Organisation's Relevant Representation **[RR-219]** 4.6.19, which states *"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."*
FS 1.13	The Applicant	*Bubble Curtains* The Applicant has stated that bubble curtains could have a noise reduction effect of 16db [REP1-033, Agenda Item 10 (iii)]. Explain whether this an average or a minimum. Explain whether this figure is specifically applicable to the Proposed Development offshore environment.	As detailed in the **In Principle Sensitive Features Mitigation Plan** **[REP1-012]** (updated at Deadline 3), the noise reduction data for all noise abatement systems proposed by Rampion 2, inclusive of double big bubble curtains (DBBCs), were sourced from available literature, with minimum attenuation values used to inform underwater noise modelling where performance ranges are provided in the literature. 1/3rd octave band frequency attenuation was available for the DBBCs, and this implied a considerably greater overall attenuation to a pile strike of up to 22dB. To remain precautionary, the lower attenuation (16dB) given in Bellman et al. (2020) was used to inform the noise modelling presented in the **In Principle Sensitive Features Mitigation Plan** **[REP1-012]** (updated at Deadline 3).
FS 1.14	Natural England	*Red Seabream* The ExA notes that the MMO stated that it could be suitable to use the audiogram for red seabream as a proxy for black seabream in terms of hearing ability [RR-219, Paragraph 4.7.12]. Explain why in detail, in the view of NE, red seabream should not be used as a proxy for black seabream in these circumstances [REP1-059a, Point 35].	It may be possible to use the audiogram for red seabream as a proxy for the hearing acuity of black seabream. However, the critical requirement to determine a suitable threshold, is the level of noise that would lead to a disturbance sufficient to cause abandonment of nests. This value of disturbance is not known for any species of seabream, and so the Applicant has recommended disturbance values for seabass as the best alternative.

Ref	Question To:	Question	Applicant's Response
FS 1.15	The Applicant	*Noise Abatement Zoning* The MMO has recommended that a conservative approach to include noise abatement across the entire site rather than using a zoning approach should be adopted [REP2-035, Paragraph 1.17.2]. Provide a response on this approach.	As presented in the **In Principle Sensitive Features Mitigation Plan** [**REP1-012]** (updated at Deadline 3), 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. The Applicant has also committed to the use of at least one offshore piling noise mitigation technology for the duration of the construction phase (C-265). This measure is secured in Condition 11(1)(j) of the dMLs Schedules 11 and 12 of the **Draft Development Consent Order** **[REP2-002]** (updated at Deadline 3). Please also refer to response to the Examining Authority's Written Question **FS 1.6**, which explains in detail why the Applicant considers the proposed approach to be suitably precautionary.
FS 1.16	Natural England	*Temporary Threshold Shift (TTS) Mitigation for Seahorses* As set out in Figures 5-1 and 5-2 [REP1-020], the mitigated impact range for TTS on seahorses do not overlap with the Beachy Head West MCZ. Confirm whether, with mitigation, there would be no adverse effects to seahorses or the conservation objectives of this MCZ.	
FS 1.17	The Applicant	*Behavioural Noise Threshold of Seahorses* Natural England have stated that no evidence has been provided to support 141dB (SELss) being a suitable behavioural threshold for seahorses [REP1-059a, Point E96]. Provide a response and, if necessary, additional evidence to support the assertion.	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 the ExA to **Appendix 11.3: Underwater noise assessment technical report, Volume 4** of the Environmental Statement (ES) **[APP-149]**, where the built-in precaution of the noise modelling is detailed. The Applicant maintains that a 141dB SELss behavioural threshold, as defined by Kastelein et al. (2017) is appropriate as the stricter suggested 135 dB SELss threshold represents only a brief startle response (sudden short-lived changes in swimming speed) in a species known to be particularly sensitive, sprat, and should not be considered suitable to represent the major behavioural changes that would constitute a failure to meet conservation objectives. 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. Taking this into consideration, the behavioural impact threshold as defined by Kastelein et al. (2017) is slightly higher but still considered precautionary, and therefore a suitable threshold to apply to underwater noise sensitive receptors such as seahorse. It should be reiterated that, as stated in **Chapter 8: Fish and shellfish ecology, Volume 2** of the ES **[APP-049]**, the Applicant does not support the application of the recommended 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), 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 would reasonably be expected to be accustomed to higher levels of noise and would thus have a correspondingly lower sensitivity to disturbance by noise. Notwithstanding the above, as detailed in the **In Principle Sensitive Features Mitigation Plan** **[REP1-012]** (updated at Deadline 3), 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 from underwater noise from piling is minimised.

Ref	Question To:	Question	Applicant's Response
FS 1.18	Natural England	*Shallow Water Noise Transmission* The Applicant has set out, with regards to noise effects on seahorses, that depth is the most critical factor on noise travelling as deeper water lends itself to greater transmission with rapid attenuation occurring in shallower water where the environment becomes very complex and increases attenuation, in addition to increased background noise [REP1-033, Agenda Item 109(i)]. If seahorses are within shallower coastal waters, confirm agreement that this would reduce the noise effects, and if so would this reduce effects from noise to a level where there would be no likely significant effect on Seahorses?	
FS 1.19	Natural England	*Seahorse Numbers* The Applicant states that seahorse numbers within the vicinity of the Proposed Development are generally low [REP1-017, Page 307, Ref E40]. Provide a response.	
FS 1.20	MMO	*Sandeel* The Applicant has submitted further information on sandeel habitat which it says undertaken following the MarineSpace (2013a) methodology. This concludes that based on available evidence the Proposed Development would not be considered a key area for sandeel Rampion 2 Offshore Wind Farm - Examining Authority's Written Questions 80 spawning activity [REP1-020, Section 3.1]. Provide a response, including whether any outstanding concerns remain with how the Proposed Development could impact sandeel spawning habitats.	
FS 1.21	MMO	*Herring Spawning Areas* The Applicant has submitted additional information using heatmapping exercises for herring with the conclusion given that it indicates that the Order limits are in areas of very low to low confidence of herring spawning habitats [REP1-020, Paragraph 3.2.9]. Provide a response.	
FS 1.22	The Applicant MMO	*Herring Spawning Areas* The submitted evidence [REP1-020, Section 3.2.10] suggests there are areas of high confidence that suitable herring spawning substrates are present 8km to the southeast of the array areas. Explain whether this indicates that there is likely to be herring spawning as close as 8km from the Order limits and potential piling areas.	The area identified by the Examining Authority, of high confidence that suitable herring spawning substrates are present (located 8 km from the array area) is classified as such due to the presence of 'Preferred' spawning substrates and densities of >600 herring larvae per m^2 present. The Applicant notes however, that this is not indicative of the peak larval densities (98,500 larvae per m^2) recorded in the IHLS trawls, which are located approximately 45 km southeast of the array area. This is supported by herring larval surveys undertaken for the Rampion 1 development from November 2014 to January 2015. The surveys recorded high abundances of herring larvae in January 2015, at distances in excess of 45km south and south east of the development area.

Ref	Question To:	Question	Applicant's Response
			The Applicant notes that hydrodynamic conditions in the English Channel cause fish larvae to drift in a north-easterly direction, indicating that spawning areas are located to the south of the Proposed Development area, closer to the French coast. This is further supported by the location of a herring spawning ground, as defined by Coull et al. (1998) located 47km from the Rampion 2 array area. The Applicant is therefore confident that it is unlikely that any spawning activity is occurring as close as 8km from the proposed DCO Order Limits.
FS 1.23	The Applicant	*Noise Threshold Overlap with Herring Spawning* At ISH1 [EV3-001], the Applicant indicated that, at the very worst case, boundaries between the 135dB noise threshold for herring behavioural effects and the herring spawning ground could overlap. Confirm whether there could be significant herring spawning grounds outside of that defined by Coull et al (1998) which could be within the 135db noise threshold area for herring behavioural effects.	As detailed in **the In Principle Sensitive Features Mitigation Plan [REP1-012]** (updated at Deadline 3), the Applicant has committed to the implementation of at least one offshore piling noise mitigation technology throughout the piling campaign, therefore mitigating against potential impacts from underwater noise to spawning herring. Within **Deadline 1 Submission – 8.25.1 Applicant's Post Hearing Submission – Issue Specific Hearing 1 Appendix 9 – Further information for Action Points 38 and 39 [REP1-020]**, the Applicant has presented modelling outputs 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). To ensure a precautionary approach, the minimum noise abatement offered by the proposed mitigation was modelled (-6dB reduction from a low noise hammer). As evidence in Figures 4-3 and 4-4 of **Deadline 1 Submission – 8.25.1 Applicant's Post Hearing Submission – Issue Specific Hearing 1 Appendix 9 – Further information for Action Points 38 and 39 [REP1-020]**, the implementation of the proposed mitigation during the Downs stock spawning period provides a significant reduction in the behavioural effect impact ranges as defined using the 135dB SELss threshold (based on the Hawkins et al., (2014) study), with no interaction of the noise contours with the herring spawning ground (as defined by Coull et al., 1998). As detailed in the Applicant's response to FS 1.22 above, areas of high herring larval densities are located approximately 45 km southeast of the array area. Hydrodynamic conditions in the English Channel cause fish larvae to drift away from the spawning ground in a north easterly direction, indicating that spawning areas are located to the south of the development area, closer to the French coast. Therefore, the presence of high densities of herring larvae are not indicative of the locations of spawning grounds and actively spawning adult herring. Therefore, any overlap of the 135dB noise threshold contour with areas of high-density larvae, is not indicative of the potential for behavioural effects of spawning herring, rather the effects on herring larvae. 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 the source (6.2 km for underwater noise impacts from piling operations), and therefore will have no interaction with areas of high larval densities. The mitigated injurious contours for eggs and larvae are presented in Figures 4-1 and 4-2 of **Deadline 1 Submission – 8.25.1 Applicant's Post Hearing Submission – Issue Specific Hearing 1 Appendix 9 – Further information for Action Points 38 and 39 [REP1-020]**, and illustrate that the implementation of mitigation further reduces the impact ranges from underwater noise, ensuring no overlap with areas of high densities of herring larvae of mitigated piling noise at a level that will cause injurious effects of herring eggs or larvae.
FS 1.24	MMO	*Mitigated Noise Thresholds for Herring* The Applicant has presented the unmitigated behavioural impact ranges on herring, and the reduced impact contours from the minimal noise abatement offered by the mitigation	

Ref	Question To:	Question	Applicant's Response
		proposed (-6dB reduction from the use of a low noise hammer) during the Downs herring spawning period relative to the spawning ground [REP1-020, Paragraph 4.1.12, Figures 4-3 and 4-4]. Confirm whether there would be no behavioural effects on herring through piling noise if mitigation is used. Explain whether the 6db noise reduction used by the Applicant appropriate for such an exercise.	
FS 1.25	MMO	*Behavioural Effects on Herring Spawning* In a worst-case scenario, explain the potential behavioural effects of piling noise on herring whilst spawning.	

Table 2-21 Benthic and Offshore Processes

Ref	Question To:	Question	Applicant's Response
BP 1.1	Natural England MMO	*Predictive Modelling* The Applicant has provided some additional information on the use of predictive modelling to provide a habitat model for the seabed [REP1-033, Agenda Item 12(i)]. The Applicant states that the model was retained for the ES as it provides wider contextualisation of habitats rather than being relied on instead of the site-specific data and the Applicant could have removed it but viewed it as useful information. The Applicant also states that the site-specific data has been updated and added to the model. Explain whether the use of some degree of predictive modelling a suitable approach, to address any remaining data gaps at this stage, or is it a question of the degree at which predictive modelling has been relied upon.	Noting this question is directed at other Parties, the Applicant can confirm that for the purpose of Environmental Impact Assessment (EIA) the habitats that were recorded during the site specific surveys are the main focus of the assessment. The assessment also draws upon some of the historic data that was presented within the predictive habitat model to build a broader picture of habitats; thus the assessment is more precautionary in nature as it assesses a wider range of potential habitats where ground-truthing cannot provide 100% coverage. The Applicant reiterates that the coverage of 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.
BP 1.2	The Applicant	*Predictive Modelling* Provide the ExA with information as to the level of evidence/data which is based on predictive modelling and the amount which has been based on survey work and data.	Predictive habitat models are used to statistically relate the geographical distribution of species or communities to the environment. **Appendix 9.3: Rampion 2 Offshore wind farm subtidal benthic characterisation survey report, Volume 4 [APP-137]** sets out the methods of the modelling in detail and the literature data that was collated as part of the modelling process. The literature data was used to support the site specific survey data (including geophysical results) to develop a final model of predicted biotopes. As detailed within **Appendix 9.3: Rampion 2 Offshore wind farm subtidal benthic characterisation survey report, Volume 4 [APP-137]**, the biotopes that were found across the survey area from site specific data collection, including DDV and grab sampling included the following: A4.13 – Mixed faunal turf communities on circalittoral rock, A4.23 - Communities on soft circalittoral rock, A4.131 - Bryozoan turf and erect sponges on tide-swept circalittoral rock, A4.134 – *Flustra foliacea* and colonial ascidians on tide-swept moderately wave exposed circalittoral rock, A4.214 - Faunal and algal crusts on exposed to moderately wave-exposed circalittoral rock, A4.221 - *Sabellaria spinulosa* encrusted circalittoral rock A5.141 – *Spirobranchus triqueter* with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles, A5.611 – *Sabellaria spinulosa* on stable circalittoral mixed sediment A5.431 – *Crepidula fornicata* with ascidians and anemones on infralittoral coarse mixed sediment A5.233 - *Nephtys cirrosa* and *Bathyporeia* spp. in infralittoral sand A5.261 - *Abra alba* and *Nucula nitidosa* in circalittoral muddy sand or slightly mixed sediment A5.131 - Sparse fauna on highly mobile sublittoral shingle (cobbles and pebbles) A5.142 – *Mediomastus fragilis*, *Lumbrineris* spp. and venerid bivalves in circalittoral coarse sand or gravel The following additional biotopes were included from historic data and taken through to the ecological assessment (but were not recorded in site specific surveys): A5.231 - Infralittoral mobile clean sand with sparse fauna A4.139 - Sponges and anemones on vertical circalittoral bedrock A3.215 - *S. spinulosa* with kelp and red seaweeds on sand-influenced infralittoral rock

Ref	Question To:	Question	Applicant's Response
			A4.231 - Piddocks with a sparse associated fauna in sublittoral very soft chalk or clay A5.422 - *C. fornicata* and *M. fragilis* in variable salinity infralittoral mixed sediment The model distribution did not influence the weight of these biotopes within the final assessment and where sensitive habitats were found, there was a reliance on the site-specific survey results to inform the extent and quality of such habitats.
BP 1.3	The Applicant	*Offshore Use of Plastics* The Applicant has committed to minimising the use of plastics into the marine environment and to use suitable alternatives where practicable [REP1-017, Page 338]. Explain whether it is possible to commit to not using plastics for gravel or rock bags, or other forms of cable protection, completely. If not, explain why this is the case.	During the detailed design of the works, which will take place post consent, the Applicant and its contractors will determine the potential use of rock bags and other forms of cable protection. If such solutions are planned to be used, they will be sourced from products available in the market at the time. Where possible, plastic free rock bags and other forms of cable protection will be sought, though it is important to note that this will be dependent on the availability of such products in the supply chain and consideration of the durability of the material to maximise subsequent recovery.
BP 1.4	Natural England MMO	*Cable Protection* Explain whether there any forms of cable protection included within the ES which should be discounted where cable protection is necessary.	
BP 1.5	Natural England MMO	*Removal of Cable Protection* The Applicant has stated that it cannot commit to the removal of cable protection, as this would be subject to a separate licence application to enable decommissioning of the project [REP1-30, Paragraph 2.1.4]. Provide a response. Explain if there is a possibility that, overtime, there could be ecological reasons (such as the colonisation of cable protection) for not wanting the removal of cable protection at decommissioning stage.	
BP 1.6	The Applicant	*HDD Cable Depth Under Beach* The Applicant has stated that it is not possible to outline a minimum depth of the cable underneath Climping Beach. However, it expects a target depth of at least 5-10m [REP1- 025, Para. 1.3.14]. **The Applicant** Explain whether this mean that there would be a target of at least 5m, but for various reasons it could be less than this.	The HDDs will be designed post consent once suitable survey information has been gathered and a contractor has been selected. At the entry and exit of the HDD, the depth of the drill will be less than 5m as the cable alignment transitions from its open cut burial depth. This transition is likely to be a few tens of metres. After this point the drill will have a depth of at least 5m.
		Natural England and the MMO Provide a response as to whether this is a sufficient depth of cable depth for the lifetime of the proposed development, accounting for coastal physical changes and erosion. Explain whether there is a minimum depth of HDD cable under the surface of the intertidal area and beach that should be secured.	Noting this question is directed at other Parties, the Applicant would highlight its response to Natural England's relevant representation, row D23, presented in the Applicant's **Deadline 1 Submission – 8.24 Applicant's Responses to Relevant Representations [REP1-017]**.

Ref	Question To:	Question	Applicant's Response
BP 1.7	The Applicant	*Mechanical Cutters* The Applicant states that it would look to use specialist equipment, noting that there are various provisions in the mitigation plans to use equipment with a narrower footprint to minimise disturbance. It states that this could still include the use of a mechanical cutter, but one that had less impact. Provide examples of such equipment and how it could have lesser impact than other forms of mechanical cutters.	The detailed design of the offshore cable installation works will take place post-consent once survey information has been gathered and a contractor has been selected. Part of the evaluation of the equipment proposed by contractors at the tender stage will be to consider the ability of this equipment to minimise disturbance. One of the principal impacts of cutting equipment will be the footprint of the equipment tracks that are in contact with the seabed. This type of equipment comes in a variety of sizes, generally relating to the target depth that the cable requires. Selecting a piece of equipment that is capable to complete the work to the other consent parameters, whilst having as smaller footprint as possible will help to lessen impact compared with bigger cutting tools which could also have been selected.
BP 1.8	Natural England MMO	*Avoidance of Offshore Chalk* The Applicant has stated that 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 [REP1-017, Page 344]. Given the extent of chalk near the coast provide a response that HDD cannot be used to avoid impacts to chalk. Explain whether the impacts to chalk from the proposed cable corridor would be unavoidable.	
BP 1.9	The Applicant MMO	*Disposal of Chalk* The MMO welcomed the Applicant's commitment that they would engage with the MMO to establish whether a condition is required within the DML relating to the disposal of chalk arising from the export cable area to the array area [REP2-035, Paragraph 1.11.4]. Please provide such a condition within the DMLs, or explain why it is not necessary.	The Applicant confirms to the Examining Authority and the MMO that no chalk material arising from the export cable corridor area will be transported from that area for subsequent disposal within the array area. On this basis, the Applicant does not consider there to be a need for an additional condition within the dML.
BP 1.10	Natural England MMO	*Cuttings of Chalk* The Applicant has confirmed that they would infill the cable trench with the chalk cuttings, where the cable is laid within the chalk [REP1-017, Page 348]. Explain whether the value of chalk cuttings the same as the chalk before it is cut, even if the cuttings are put back in the trench.	
BP 1.11	The Applicant	*Avoidance of Sensitive Features* The Applicant has stated its objective to avoid sensitive features where practicable and minimise the impacts where this cannot be achieved [REP1-017, Page 365]. From the survey work and the anticipation of the route, explain what sensitive receptors might not be avoided, through micro-siting for instance.	Based on site-specific evidence presented 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 notes that some areas of chalk bedrock will not be able to be avoided due to its extent across the inshore area of the regional coastline. As demonstrated in the initial route design work, presented in the **In Principle Sensitive Features Mitigation Plan [REP1-012]** (updated at Deadline 3) secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [REP2-002]** (updated at Deadline 3), the Applicant considers that the majority of sensitive habitat features can be avoided through micro-siting, however some areas of 'potential, unknown' black seabream nesting (outside of the Kingmere MCZ) may also be unavoidable. The Applicant would highlight, however, that mitigation for such areas includes a seasonal restriction on works for the duration of the sensitive spawning period and thus no direct effects on black seabream nesting will arise from the

Ref	Question To:	Question	Applicant's Response
			construction activities. In any case, cable route design would be further informed by the pre-construction surveys to identify further, currently unknown, nesting areas, should these exist. The Applicant would 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 [REP2-002]** (updated at Deadline 3)). 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 [REP1-012]** (updated at Deadline 3) secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO [REP2-002]** (updated at Deadline 3) and will inform the detailed design plan required to be submitted and approved pursuant to condition 11(1)(a) of the dMLs (Schedules 11 and 12 of the **draft DCO [REP2-002]** (updated at Deadline 3)).
BP 1.12	Natural England	*Level of Geotechnical Data* NE has advised that geotechnical data is provided at the consenting stage to understand how likely cable burial is and that any associated mitigation would be effective [REP2-040, Q12-2]. If this is the case, and if no more geotechnical data is submitted, can NE take account of the proposed mitigation as included in the ES when drawing its conclusions?	
BP 1.13	The Applicant	*Use of Gravel Bag Beds* NE have raised concerns with the use of gravel bag beds, due to the potential for abrasion of the chalk beds and the possible downwearing of chalk, which NE state could cause a permanent loss of irreplicable chalk [REP2-038, Page 4, Point 4]. Has the Applicant taken these potential impacts into consideration and how would such impacts be avoided if gravel bag beds were used?	The use of gravel bags will be required in the situation where the cable lay vessel will need to ground to enable the installation work to proceed, but the pre-construction survey information has demonstrated a risk that the cable lay vessel could be damaged by grounding. By definition, abrasion of the underlying chalk bed would only occur if and where gravel bags or any loose gravel are moved whilst in direct contact with the natural chalk seabed, affecting the surficial layer of the seabed. Some abrasion of the surface might also occur by the action of the machinery used to lay or recover the gravel bags and gravel. The upper seabed surface potentially affected by abrasion may include areas of exposed chalk, but may also include areas of weathered (heavily modified or softened) chalk, loose chalk pieces, overlying loose (e.g. sandy) sediment accumulations. Local benthic flora and fauna may also influence the physical properties or be part of the surface character of the seabed in affected areas. Some abrasion might be reasonably expected to temporarily change the appearance and texture of the seabed (e.g. change or removal of the weathered surface to some degree) immediately following the activity, but this is likely to recover naturally with time. It is considered to be unlikely that abrasion alone will cause measurable permanent or long term changes to the gross seabed morphology or the underlying chalk. Therefore, there will be no long-term loss of a Habitat of Principal Importance.
BP 1.14	The Applicant	*Location of Gravel Bag Beds* Explain whether the location of any gravel bag beds would be flexible. If yes, could the Applicant confirm that the location be chosen to avoid sensitive benthic features or chalk structures.	The location of any gravel bag beds used would be flexible up to a certain extent as they would need to be placed in the location(s) where the cable lay vessel would be planned to be grounded in order to be able to install the cable. The Applicant has committed to undertaking detailed pre-construction surveys as referenced in the **Offshore In Principle Monitoring Plan [APP-240]** (updated at Deadline 3), the provision of which is secured in Condition 11(1)(j) of the dMLs (Schedules 11 and 12 of the **draft DCO [REP2-002]** (updated at Deadline 3) to inform the design plan (as secured by condition 11(1)(a)). Proposals for micrositing around priority habitats, which importantly will be based on the results of the pre-construction surveys, are

Ref	Question To:	Question	Applicant's Response
			presented within the **In Principle Sensitive Features Mitigation Plan** **[REP1-012]** (updated at Deadline 3) secured in Condition 11(1)(k) of the dMLs (Schedules 11 and 12 of the **draft DCO** **[REP2-002]** (updated at Deadline 3) and must also be shown in the design plan to be submitted under condition 11(1)(a) which requires to account for micrositing for environmental features**.** The location of gravel beds will be microsited to avoid sensitive features, where practicable. The final plan for cable routing and associated use of gravel bags will be presented within 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** **[REP2-002]** (updated at Deadline 3)) and again, must also be shown in the design plan to be submitted under condition 11(1)(a).
BP 1.15	The Applicant	*HDD Under the Nearshore Area* Can the Applicant provide a calculation of how far the HDD could be extended offshore from the coast, to avoid or minimize adverse effects to chalk or avoid the use of gravel bag beds, for example?	The length of the HDD will be determined through the detailed design process though it will, as a minimum exit seaward of mean low water springs. Detailed design will only become possible once ground information has been obtained for the landfall, with the campaign for obtaining this information taking place post consent. It is therefore not possible to provide a calculation as requested. The potential use of the duct extension will enable the duct to go further seaward, though this will mean trenching through the seabed to install it. Gravel bags for the landfall works will only be used in the event that the cable installation vessel needs to ground to enable the works but where the seabed, following completion of survey work, is found to have the potential to damage the vessel.

Table 2-22 Marine Mammals

Ref	Question To:	Question	Applicant's Response
MM 1.1	MMO	*Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Protocol* In the MMO's responses to WRs submitted at Deadline 2 [REP2-035] the MMO states it acknowledges the Applicant's creation of the Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Protocol [APP-237] and that the Applicant is confident that appropriate mitigation can be secured. Confirm if there are any outstanding concerns from the MMO, particularly but not exclusively, relating to: a) The Marine Mammal Underwater Noise Assessment relating to fleeing animals b) Permanent Threshold Shift significance c) The TTS assessment d) Sensitivity score for cetaceans	
MM 1.2	Natural England MMO	*Worst-case Piling Scenario for Marine Mammals* State whether there are any ongoing concerns with the Applicant's modelling of the worstcase scenario for piling in relation to marine mammals.	
MM 1.3	The Applicant Natural England MMO	*Offshore In-principal Monitoring Plan* Natural England's Risk and Issue log submitted at Deadline 2 [REP2-041] continues to include an amber concern (C40) with the marine mammal section of the Offshore In-Principal Monitoring Plan, regarding proposed post-consent monitoring only including the first 4 piles. It states there is no consideration of monitoring the effectiveness of the mitigation measures in reducing the impacts to acceptable levels. **The Applicant** Provide a response to Natural England's concerns on the Offshore In-Principal Monitoring Plan. Include an update on the latest status of the marine mammal section of the Offshore InPrincipal Monitoring Plan. Address Natural England's detailed questions on this topic related to, but not limited to: a) The hypotheses being tested. b) Design of monitoring to achieve mitigation outcomes.	No significant effects are predicted based on the marine mammal underwater noise assessment (see **Chapter 11: Marine mammals, Volume 2** of the ES **[REP1-004]**), therefore the Applicant maintains that post-consent monitoring for marine mammals is not required. The mitigation measures (MMOb, PAM, ADDs) detailed in the **Draft Piling Marine Mammal Mitigation Protocol [APP-236]** and the **Draft Unexploded Ordnance Clearance Marine Mammal Mitigation [APP-237]** detail standard mitigation for the industry, with studies and literature to support the effectiveness of the measures cited therein. The underwater noise will be monitored for the first four piles as per the industry standard will validate the noise modelling undertaken at the post-consent stage in line with the most recent project description. This will be used to validate the conclusions presented in the final Piling Marine Mammal Mitigation Protocol produced for the post-consent stage. At this stage the Applicant has not committed a particular Noise Abatement System for mitigation therefore the specific design for monitoring mitigation outcomes is not detailed. The Applicant will continue to consider mitigation methods.

Ref	Question To:	Question	Applicant's Response
		c) Timing of surveys.	The noise monitoring will take place during the start of the piling program with noise monitoring undertaken of the first four piles.
		d) Lessons learnt from previous surveys.	Lessons learnt from other projects and Noise Abatement System (NAS) trials will be considered as part of the decision-making process regarding efficacy of NAS.
		e) Effectiveness of measures employed.	The effectiveness of potential mitigation measures has therefore not been detailed further. The minimum and maximum noise reduction efficacy for various Noise Abatement System (NAS) have been detailed in Table 5-3 in **Draft Piling Marine Mammal Mitigation Protocol [APP-236]**. The Applicant is providing more information in regards to the limitation of NAS measures in **Appendix I MM: Noise Abatement Systems** (of this document).
		Natural England Provide an up-to-date statement on whether the Applicant has addressed Natural England's concerns on this matter. **MMO** Provide a response on this matter.	
MM 1.4	The Applicant	*Offshore In-principal Monitoring Plan* Provide a response to the MMO's request to have a review period of six months as opposed to four months for the Offshore In-Principal Monitoring Plan.	The Applicant has accepted a six month review period for the Offshore Monitoring Plan to be in accordance with the **Offshore In-principle Monitoring Plan [APP-240]**. This is included in the update iteration of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3).
MM 1.5	The Applicant	*Working in Proximity to Marine Wildlife Protocol* Confirm: a) If this document is an Outline document and whether further documentation would be produced post-consent.	The Applicant confirms the Working in Proximity to Wildlife document is an Outline document and further documentation on the protocol will be provided post-consent.
		b) How will the commitment to develop parts of the Vessel Management Plan in line with the Working in Proximity to Marine Wildlife Protocol be secured in the DCO conditions.	Condition 11(1)(f) of each of Schedule 11 and 12 of the **Draft Development Consent Order [REP2-002]** (updated at Deadline 3) (comprising the deemed marine licences for the generation and transmission assets respectively) require that the vessel management plan to be submitted for approval must incorporate the Working in Proximity to Marine Wildlife Protocol. The document is to be approved by the Marine Management Organisation and must be implemented as approved in accordance with Condition 12(4) and (5).
		c) How will it be secured that Natural England should be consulted on the follow-on document produced post consent.	The **Draft Development Consent Order [REP2-002]** (updated at Deadline 3) secures that all documentation submitted pursuant to the deemed Marine Licences are to be approved by the Marine Management Organisation (MMO) as the body created under the 2009 Marine and Coastal Access Act which is responsible for monitoring and enforcement of the licences (Part 1, paragraph 1 of each of Schedules 11 and 12). As such it will be a matter for the MMO to consult Natural England on the discharge of condition 11(1)(f) as necessary.
MM 1.6	The Applicant	*Harbour Porpoise Cumulative Effects Assessment* Provide further evidence as to whether the higher number of animals predicted to be impacted in the Applicant's updated Cumulative Effects Assessment for Harbour Porpoise [REP1-004], may have an effect upon the overall harbour porpoise population.	The number of animals predicted to be impacted in the updated Cumulative Effects Assessment (CEA) was greater than the previous CEA (see **Chapter 11: Marine mammals, Volume 2** of the ES **[REP1-004]**). However, the conclusion of the assessment remains the same - that there will not be an overall effect on the harbour porpoise population. This is based on the best available science, for example, previous

Ref	Question To:	Question	Applicant's Response
			population modelling (using the Interim Population Consequences of Disturbance Model iPCoD[5]) of offshore windfarms in English waters of the southern north sea (located in North Sea MU for harbour porpoise) has demonstrated low probabilities of population-level impacts, even when 16 piling operations (13 projects, 3 projects with concurrent operations) were modelled over a 12-year period (disturbing up to a total of 34,396 porpoise per day) (Booth *et al*., 2017). The number of porpoise assumed to be disturbed by construction across the Tier 1-3 projects in this CEA is lower than what was modelled in Booth *et al*., (2017) (average disturbed per day between 2021 and 2030 is 14,790 porpoise over an ten year period. An average of 9,017 porpoise disturbed per day over the five years the marine mammal CEA has assumed), of which Rampion 2's contribution is 452 individuals per year. Therefore, with fewer porpoise predicted to be disturbed per day, across fewer years than the previous modelling, the likelihood of population level effects is expected to be very low. More recently, the iPCoD model was used to explore noise management in the Southern North Sea SAC for harbour porpoise (Brown *et al*., 2023). This study provided a wide range of iPCoD simulations including disturbance to harbour porpoise over a 10-year period at the scale of the North Sea Management Unit (MU). One of the most extreme disturbance scenarios assumed a seasonally variable base-level daily disturbance of c. 3,500 - 7,000 porpoise throughout the MU, in addition to disturbance at up to twice the Southern North Sea SAC seasonal disturbance thresholds (up to c. 16,000 porpoise disturbed per day in summer, averaging c. 8,000 disturbed across the season). Even at these persistently high disturbance levels, the predicted declines were low, generally ≤5% after 10 years of disturbance and, in each case, the population remained at a stable size once piling disturbance ended, indicating no long-term effect on the population trajectory. (It is important to note here that iPCoD does not allow for density dependence and as such the population cannot increase beyond the baseline levels after disturbance has ceased. This is due to the baseline population parameter in the iPCoD model setting the highest number of animals that can be in the population at any one time, therefore after disturbance the population cannot recover enough to exceed the baseline population. Additionally, density dependence is based on available habitat and additional factors (e.g. prey availability) which is hard to predict in a potential future model scenario). Similarly, the Disturbance Effects of Noise on the Harbour Porpoise Population in the North Sea (DEPONS)[6] model has been used to predict the potential population level effects of cumulative OWF construction in the North Sea. Nabe-Nielsen *et al*., (2018) showed that the North Sea porpoise population was unlikely to be significantly impacted by the construction of 60 windfarms each with 65 turbines resulting in 3,900 disturbance days between 2011-2020, unless impact ranges were assumed to be much larger (exceeding 50 km) than that indicated by existing studies. Even at these extreme disturbance scenarios, the modelled North Sea population showed a quick recovery to baseline size (within 6-7 years) despite up to a 20% decline in population size. Therefore, given that impacts are unlikely to affect the population trajectory over a generational scale, the magnitude of the cumulative disturbance from underwater noise is Medium. The sensitivity of harbour porpoise from disturbance to underwater noise is Low (as determined in the project alone impact assessment).

[5] https://www.smruconsulting.com/population-consequences-of-disturbance-pcod
[6] https://depons.eu/

Ref	Question To:	Question	Applicant's Response
			Overall, the sensitivity of harbour porpoise has been assessed as Low and the magnitude is predicted to be Medium. Therefore, the significance of the effect has been predicted to be of Minor Adverse Significance which is Not Significant in EIA terms.
MM 1.7	Natural England	*Bottlenose Dolphin* Can Natural England explain whether the updated bottlenose dolphin baseline and quantitative impact assessment provided by the Applicant at Deadline 2 [REP2-019], addresses the concerns of Natural England. If not, why not.	
MM 1.8	The Applicant	*Marine Mammal Mitigation Protocol (MMMP)* In its Mid-Examination progress tracker submitted at Deadline 2 [REP2-013] the Applicant states on page 18 that: *"The Applicant welcomes agreement with Natural England on all topics related to marine mammals"* Yet Natural England's risk and issues log submitted at Deadline 2 [REP2-041], states there has been no change in Natural England's concerns regarding the Marine Mammal Mitigation Protocol (MMMP) and categorises this issue as 'amber' which is defined as meaning that Natural England does not agree with the Applicant's position or approach and consider that this could make a material difference to the outcome of the decision-making process of this project. a) Explain why the Applicant believes all issues raised by Natural England relating to marine mammals to be resolved. Additionally, explain how the Applicant believes Natural England's concerns in point C33 of their Risk and Issues log [REP2-041] have been resolved, particularly:	The Applicant accepts the risk and issues log submitted by Natural England at Deadline 2 **[REP2-041]** as the definitive statement of their position, and that the Applicant has not reached agreement in relation to all topics relating to marine mammals. The position will be corrected in the next iteration of the Progress Tracker that will be submitted at Deadline 4. The Applicant's is continuing to engage with Natural England to resolve the issues raised at point C33 of their risk and Issues log **[REP2-041]** are set out below.
		b) How an appropriate acoustic deterrent device (ADD) duration can be calculated if the impact range for simultaneous piling is not presented.	Acoustic deterrent device (ADDs) are used as part of the suite of measures in the **Draft Piling Marine Mammal Mitigation Protocol [APP-236]** to prevent instantaneous Permanent Threshold Shift (PTS) by encouraging individuals in the immediate proximity of the piling site to leave the area in advance of piling commencing, where the source levels will be at their loudest. The ADD duration has been presented based on the instantaneous PTS SPLpeak impact ranges. Therefore, piling at other locations would not influence the calculation of the ADD duration, as any simultaneous piling would not be within the instantaneous PTS ranges. It is possible that animals could be exposed to noise levels that could cause cumulative PTS in relation to simultaneous piling, but this is not mitigated by ADDs. The modelling for simultaneous piling presents a worst-case spatial spread of locations and assumes the two piling operations start at the same time, which is considered highly unlikely. This scenario is also for cumulative PTS, not instantaneous PTS. Should simultaneous piling occur, an ADD would be required for both locations and the durations for each would be 7.6 minutes as calculated in the **Draft Piling Marine Mammal Mitigation Protocol [APP-236]**.
		c) Whether the terminology used in the MMMP clearly demonstrates whether the Joint Nature Conservation Committee guidelines for piling mitigation are being adhered to.	As previously highlighted by the Applicant, the Joint Nature Conservation Committee (JNCC) (2010) guidance 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.

Ref	Question To:	Question	Applicant's Response
			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** of the Environmental Statement (ES) **[APP-149]** and Table 11-13 of **Chapter 11: Marine mammals, Volume 2** of the ES **[REP1-004]**. The 7.5 minutes identified in the piling parameters is only the initial phase of this overall soft-start period, after which there are further steps up in hammer energy, before the full hammer energy is reached. For monopiles after the first 7.5 minutes at 880 kJ hammer energy, there is another 7.5 minutes at 1,760 kJ, then another 7.5 minutes at 2,640 kJ and a final 7.5 minutes at 3,250 kJ before the full hammer energy at 4,400 kJ is reached. Therefore, the Applicant is complying with the JNCC 2010 guidelines and the perceived issue is purely on the use of terminology as highlighted by Natural England (as opposed to not adhering to guidance).
		d) In line with Natural England's request, provide a document that presents:	The Applicant has provided additional information in **Appendix I MM: Noise Abatement Systems** (of this document) which addresses the Examining Authority's Written Question **MM 1.8 e)** on uncertainties of at-source noise abatement methods.
		e) Consideration of the uncertainties in the levels of noise abatement at-source noise abatement methods in the draft MMMP.	The uncertainties of noise abatement systems identified in the **Draft Piling Marine Mammal Mitigation Protocol** **[APP-236]** have been detailed in **Appendix I MM: Noise Abatement Systems** (of this document).
		f) An approach to determining appropriate ADD duration for simultaneous piling.	Please see the Applicant's response provided in relation to the Examining Authority's Written Question **MM 1.8 b)** above.
		g) Considerations for monitoring the effectiveness of suggested mitigation measures in reducing the underwater noise impacts to acceptable levels.	At this the stage, the Applicant has not committed to a particular Noise Abatement System (NAS), therefore the effectiveness of potential mitigation measures has not been detailed further. The minimum and maximum noise reduction efficacy for various NAS have been detailed in Table 5-3 in **Draft Piling Marine Mammal Mitigation Protocol** **[APP-236]**. The Applicant is providing more information in regards to the limitation of NAS measures in **Appendix I MM: Noise Abatement Systems** (of this document).
MM 1.9	Natural England	*Piling Soft Start/Ramp Up* Natural England has previously raised concerns in its Relevant Representations [RR-265], which remain in its Risk and Issue log at Deadline 2 [REP2-041] regarding: a) The soft-start/ramp up procedure has been modelled as worst-case. b) Where in the DCO/DML a Commitment is secured to not exceeding the worst-case soft-start/ramp up profile. State whether there are any outstanding concerns regarding piling soft start/ramp up.	

Table 2-23 Offshore and Intertidal Ornithology (excluding questions involving HRA which are in the HRA section of this document)

Ref	Question To:	Question	Applicant's Response
OR 1.1	The Applicant	*Vessel Management Plan* NPS EN-3 (2024) Paragraph 2.8.242 – requires that, "*Construction vessels and post-construction maintenance vessel traffic associated with offshore wind farms and offshore transmission should, where practicable and compatible with operational requirements and navigational safety, avoid rafting seabirds during sensitive periods and follow agreed navigation routes to and from the site and minimise the number of vessel movements overall*." Explain why a Vessel Management Plan is not included in the list of ornithological commitments as it is for Marine Mammals.	For seabirds, the commitment to a Vessel Management Plan is typically required where the proposed vessel routes along the Export Cable Corridor (ECC) intersect areas of sea known to be inhabited by species highly sensitive to disturbance from vessels (divers and seaduck species), or alternatively if vessel routes are known to directly intersect a designated site or associated functionally linked habitat. As detailed within **Table 12-8** of **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the Environmental Statement **[APP-053]**, no such connectivity occurs for Rampion 2 and the potential for disturbance and displacement within the ECC was scoped out for assessment, therefore no requirement needed for an ornithological Vessel Management Plan.
OR 1.2	Natural England	*Cumulative Effects on Great Black-backed Gull* Comment on the revised assessment undertaken by the Applicant [REP1-038] in relation to cumulative effects on the great black-backed gull submitted at Deadline 1.	To clarify, the Applicant has not presented updated cumulative effects within **Deadline 1 Submission – 8.36 Great black- backed gull assessment sensitivity [REP1-038]**, only updated collision impact values for the Proposed Development alone. This report was focused solely on presenting further information regarding the potential level of impact predicted for the project and expected behavioural response of the species to Rampion 2, hence why no cumulative assessments were presented.
OR 1.3	Natural England	*Breeding Season Figures for Great Black-backed Gull, Guillemot, and Razorbill* Provide an update on this issue, particularly stating whether Natural England has any remaining concerns regarding breeding season figures for great black-backed gull, guillemot, and razorbill.	

Table 2-24 Aviation

Ref	Question To:	Question	Applicant's Response
AV 1.1	The Applicant Ministry of Defence	*Defence Aviation* The ExA understands that an email was sent from the Applicant to the MoD in February 2024. Confirm whether this was responded to, and, for the Ministry of Defence, whether any observations on the Proposed Development will be made.	The Applicant sent an email to the Defence Infrastructure Organisation (DIO) Safeguarding on 22 February 2024. It has not yet been responded to. The email explained that since scoping the westernmost extent of the Rampion 2 extension offshore array area has been refined so that it no longer infringes danger area D037.
AV 1.2	Brighton City Airport	*Brighton City Airport* The Applicant has stated that Brighton City Airport are willing to accept a higher minimum altitude on both ends (approach directions), requiring the Airport to redesign the Instrument Flight Procedures (IFPs) because effectively it would be a new procedure [REP1-033, Point 15(i)]. Confirm that there has been communication with the Applicant and that there is an agreement to potentially altering the IFPs if the final height of the proposed wind turbines exceed a certain level.	This is not addressed to the Applicant. However, the Applicant can confirm it has been in recent contact with the Brighton City Airport Operations Director to progress the commercial agreement to amend the Instrument Flight Procedures.
AV 1.3	The Applicant National Air Traffic Services (NATS	*Radar Impacts* Update the ExA and confirm that there is an agreed technical solution with regard to the potential effects on the Pease Pottage radar installation and the progress with any commercial agreements necessary. Provide an estimated time as to when these issues can be concluded and the holding objection from NATS removed.	NATS requested clarifications on the coordinates of the Proposed Development during a meeting on 23 February 2024, this information was provided on the 25 February 2024. Confirmation that the coordinate plotting had been assessed and signed off, from NATS was received on 3 April 2024 and no changes to the proposed mitigation were required.

Table 2-25 Commercial Fishing and Fisheries

Ref	Question To:	Question	Applicant's Response
CF 1.1	The Applicant	*Alternative Dispute Resolution* The Outline Fisheries Liaison and Co-existence Plan [REP1-013, Section 3.5.4] states that either party can activate the Alternative Dispute Resolution (ADR), but both parties have to agree to refer the dispute to the ADR. Based on a scenario where some fishery business wants to activate the ADR process, explain whether the Applicant therefore could decline to enter into this process, and what would happen in this scenario.	The Applicant confirms the position as regards Alternative Dispute Resolution (ADR) as set out in paragraph 3.5.4 of the **Outline Fisheries Liaison and Co-Existence Plan [REP1-013]**. The Applicant is committed to seeking to resolve any disputes which may arise with fishers relating to the adherence to, or agreement of cooperation agreements which are in place or being negotiated between fishers and the Applicant. Provided that a legitimate dispute had arisen, which was directly related to the terms of a cooperation agreement, the Applicant confirms that it would engage with an Alternative Dispute Resolution (ADR) process activated by a fisheries stakeholder to assist with resolving matters of disagreement, to seek to avoid more formal dispute resolution procedures. ADR is not however a substitute for any other statutory process in which fishers may participate (e.g. in relation to general fisheries topics which are relevant to the planning and consenting process) and which it would not be appropriate to refer to ADR.
CF 1.2	Sussex Inshore Fisheries and Conservation Authority (SIFCA)	*Winter Fishing in Array Areas* In the Applicant's submission "Further Information for Action Point 31 – Winter Fishing" [REP-029] it suggests that there has been lower level of activity in the R1 array area during winter, possibly due to the winter weather and also the perceived risks of operating within a windfarm array area. Would the SIFCA agree with the conclusions of this document and what would be the long-term consequences of commercial fishing post construction, particularly within the proposed Rampion 2 array areas?	During the operation and maintenance phase of Rampion 2, commercial fisheries will be prevented from actively fishing within the footprint of installed infrastructure within the array area and Safety Zones of 500m will be sought around major maintenance activities. Out with this footprint area, the assessment assumes that fishing will be possible within the array area. It is expected that potting will resume in the array area. The assessment of effects on commercial fishing activity (as presented in **Chapter 10: Commercial fisheries, Volume 2** of the Environmental Statement **[APP-051]** during the operation and maintenance phase of Rampion 2 is based upon the following, clearly stated assumptions: • Minimum turbine spacing is 830 metres for the purposes of the commercial fisheries assessment (Table 10-11) (Rampion 1 spacing is 750 metres for context). Inter-array cables will be buried where possible (Commitment C-45, Table 10-12); • Commercial fisheries will be prevented from actively fishing within the footprint of installed infrastructure within the array area, together with associated safety zones for maintenance activities (500 metres radius) and assumed safe operating distances (paragraph 10.10.4); • Outwith this footprint area, the assessment assumes that fishing will be possible within the array area where turbine spacing, and turbine layout allow productive grounds to be targeted (paragraph 10.10.5); • The individual decisions made by the skippers of fishing vessels with their own perception of risk will determine the likelihood of whether their fishing will resume within the array area. Inclement weather will be a significant contributor to this risk perception (paragraph 10.10.5); and • The type and dimension of fishing gear also influences the potential opportunities within the array area. For example, large trawl gears typically require a greater distance for safe operation and these gears are unlikely to target grounds in the vicinity of infrastructure (paragraph 10.10.5). As presented in **Deadline 1 Submission – 8.25.13 Applicant's Post Hearing Submission, Issue Specific Hearing 1 Appendix 13 – Further Information for Action Point 45 and 46 – Physical Processes and Benthic [REP1-030]**, landings data indicates that potting vessel activity is consistently lower in winter months than in summer months. Data indicates that lower levels of fishing vessel activity in Rampion 1 during winter have not resulted in an overall decline in landings from the study area. Data indicates that trends in landings across the Rampion 1 study area are consistent with those in adjacent International Council for the Exploration of the Sea (ICES) rectangles.

3. References

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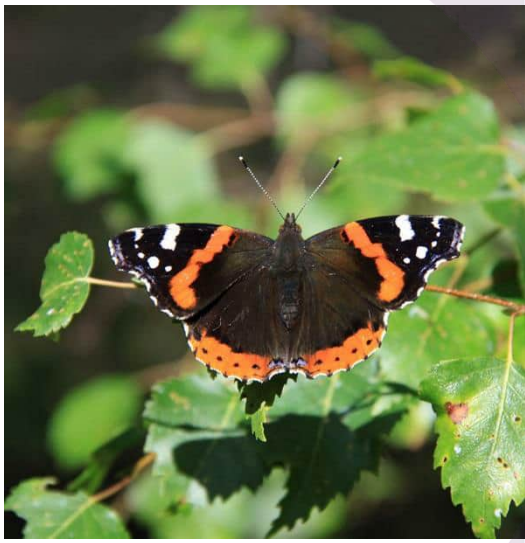
Appendix A
HRA: Rampion 2 HRA screening

Rampion 2 Offshore Wind Farm

Habitats Regulations Assessment Report to Inform Screening



Wood Environment & Infrastructure Solutions UK Limited – September 2020

Report for

RWE

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No.	Details	Date
V0.1	Draft to client	2.08.20
V0.2	Comments addressed and reviewed	10.09.20
V1.0	Issue	10.09.20

Executive summary

A Habitats Regulations Assessment (HRA) is required for any project or plan that has the potential to affect conservation sites designated under the Habitats and the Birds' Directives (Council Directive 92/43/EEC and Directive 2009/147/EC). This report has been produced to satisfy the requirements of the Habitats Directive, implemented into UK law by the Conservation of Habitats and Species Regulations 2017 and Offshore Marine Habitats and Species Regulations 2017 (the Habitats Regulations).

This report presents information to support the first stage in the HRA process (the Screening assessment) for the proposed Rampion 2 Offshore Windfarm extension project (Rampion 2) as required under the Habitats Regulations. A Screening exercise has been undertaken to identify European sites (and designated features) with the potential to be affected by Rampion 2 and determine whether the proposals could result in Likely Significant Effects (LSE), alone or in combination, on those European sites. If the potential for LSE cannot be discounted, an Appropriate Assessment of Rampion 2 will be required at Stage two of the HRA process.

This Report to inform a Screening assessment (hereafter, HRA Screening Report) is intended to inform the pre-application consultation advised by the Planning Inspectorate (2017) (Advice Note 10), through to the Development Consent Order application.

The environmental effects that could arise from the construction, operation and decommissioning of Rampion 2 have been examined for the potential to affect the qualifying features of 148 European sites. All of these European sites have the potential to be spatially connected to the potential sphere of influence defined on a precautionary basis for Rampion 2. The potential significance of the effects of Rampion 2 on European sites was considered with reference to physical and non-physical disturbances, physical interactions, pollution, changes in hydrological and coastal processes and invasive and non-native species.

With regard to the designated features of European sites, their sensitivities, vulnerabilities, and Conservation Objectives, and based on the best available information, the possibility for LSEs that could result from Rampion 2 were identified for 38 European sites. Of these, it was found LSE could not be discounted for 19 sites as a result of Rampion 2 acting alone. For 19 designations , LSE could arise from Rampion 2 acting in-combination with external plans or projects.

This outcome informs the requirement for further assessment (Appropriate Assessment) and consideration of mitigation measures at Stage 2 of the HRA process.

Contents

Acronyms

Abbreviation	Term
AA	Appropriate Assessment
BTO	British Trust for Ornithology
CEA	Cumulative Effect Assessment
cSAC	Candidate SAC
DCO	Development Consent Order
EIA	Environmental Impact Assessment
EC	European Commission
ES	Environmental statement
EU	European Union
GWDH	Ground Water Dependent Habitats
GW	Gigawatts
HRA	Habitats Regulations Assessment
ha	Hectares
HAT	Highest Astronomical Tide
HDD	Horizontal Directional Drilling
INNS	Invasive Non-Native Species
IOF	Important Ornithological Features
JNCC	Joint Nature Conservation Committee
kV	Kilovolt
LSE	Likely Significant Effect
LSEI	Likely Significant Effect In-combination
MU	Management units (species)
MW	Megawatts
MHWS	Mean High Water Springs

Abbreviation	Term
NS MU	North Sea Management Unit
NSIP	Nationally Significant Infrastructure Project
OCSW MU	Offshore Channel, Celtic Sea and South West England
OWEP	Offshore Wind Extensions Plan
OWF	Offshore Wind Farm
PEIR	Preliminary Environmental Information Report
PINS	The Planning Inspectorate
RED	Rampion Extension Development Limited
SCI	Sites of Community Importance
SNCB	Statutory Nature Conservation Body
SAC	Special Areas of Conservation
SPA	Special Protection Areas
Stage 2 AA	Stage two Appropriate Assessment
UXO	Unexploded ordnance
WTG	Wind turbine generators
ZoI	Zone of Influence

Species Glossary

Species	Latin name
Aquatic warbler	*Acrocephalus paludicola*
Arctic skua	*Stercorarius parasiticus*
Arctic tern	*Sterna paradisaea*
Puffin	*Fratercula arctica*
Balearic shearwater	*Puffinus mauretanicus*
Barnacle goose	*Branta leucopsis*
Bar-tailed godwit	*Limosa lapponica*
Bewick's swan	*Cygnus columbianus bewickii*
Black-headed gull	*Chroicocephalus ridibundus*
Black-necked grebe	*Podiceps nigricollis*
Black-tailed godwit	*Limosa limosa*
Black-throated diver	*Gavia arctica*
Cormorant	*Phalacrocorax carbo*
Common eider	*Somateria mollissima*
Common goldeneye	*Bucephala clangula*
Common greenshank	*Tringa nebularia*
Common gull	*Larus canus*
Common kingfisher	*Alcedo atthis*
Common pochard	*Aythya ferina*
Common raven	*Corvus corax*
Common redshank	*Tringa totanus*
Common sandpiper	*Actitis hypoleucos*
Common scoter	*Melanitta nigra*
Common shelduck	*Tadorna tadorna*

Species	Latin name
Common tern	*Sterna hirundo*
Cory's shearwater	*Calonectris borealis*
Dark-bellied brent goose	*Branta bernicla*
Dartford warbler	*Sylvia undata*
Dunlin	*Calidris alpinatea*
Eurasian curlew	*Numenius arquata*
Eurasian marsh harrier	*Circus aeruginosus*
Eurasian oystercatcher	*Haematopus ostralegus*
Eurasian spoonbill	*Platalea leucorodia*
Eurasian teal	*Anas crecca*
Eurasian whimbrel	*Numenius phaeopus*
Eurasian wigeon	*Anas penelope*
European golden plover	*Pluvialis apricaria*
European honey buzzard	*Pernis apivorus*
European nightjar	*Caprimulgus europaeus*
European shag	*Phalacrocorax aristotelis*
European storm petrel	*Hydrobates pelagicus*
Fair Isle Wren	*Troglodytes troglodytes fridariensis*
Gadwall	*Anas strepera*
Gannet	*Morus bassanus*
Golden eagle	*Aquila chrysaetos*
Goosander	*Mergus merganser*
Great bittern	*Botaurus stellaris*
Great black-backed gull	*Larus marinus*
Great crested grebe	*Podiceps cristatus*
Great northern diver	*Gavia immer*

Species	Latin name
Great skua	*Stercorarius skua*
Greater scaup	*Aythya marila*
Greenland white-fronted goose	*Anser albifrons flavirostris*
Grey heron	*Ardea cinerea*
Greylag goose	*Anser anser*
Grey plover	*Pluvialis squatarola*
Guillemot	*Gavia immer*
Gull-billed tern	*Uria aalge*
Hen harrier	*Gelochelidon nilotica*
Herring gull	*Circus cyaneus*
Kentish plover	*Larus argentatus*
Kittiwake	*Charadrius alexandrinus*
Leach's storm petrel	*Rissa tridactyla*
Lesser black-backed gull	*Oceanodroma leucorhoa*
Little egret	*Larus fuscus*
Little grebe	*Egretta garzetta*
Little gull	*Tachybaptus ruficollis*
Little tern	*Hydrocoloeus mintus*
Mallard	*Sternula albifrons*
Manx shearwater	*Anas platyrhynchos*
Mediterranean gull	*Puffinus puffinus*
Merlin	*Larus melanocephalus*
Montagu's harrier	*Falco columbarius*
Northern lapwing	*Circus pygargus*
Northern pintail	*Vanellus vanellus*
Northern shoveler	*Anas acuta*

Species	Latin name
Osprey	*Anas clypeata*
Peregrine falcon	*Pandion haliaetus*
Pied avocet	*Falco peregrinus*
Pink-footed goose	*Recurvirostra avosetta*
Pomarine skua	*Anser brachyrhynchus*
Purple sandpiper	*Stercorarius pomarinus*
Razorbill	*Calidris maritima*
Red-billed chough	*Alca torda*
Red-breasted merganser	*Pyrrhocorax pyrrhocorax*
Red-throated diver	*Mergus serrator*
Red knot	*Gavia stellata*
Red-necked phalarope	*Phalaropus lobatus*
Ringed plover	*Charadrius hiaticula*
Roseate tern	*Sterna dougallii*
Ruddy turnstone	*Arenaria interpres*
Ruff	*Philomachus pugnax*
Sabine's gull	*Xema sabini*
Sanderling	*Calidris alba*
Sandwich tern	*Thalasseus sandvicensis*
Short-eared owl	*Asio flammeus*
Slavonian grebe	*Podiceps auritus*
Sooty shearwater	*Puffinus griseus*
Spotted redshank	*Tringa erythropus*
Velvet scoter	*Melanitta fusca*
Whooper swan	*Cygnus Cygnus*
Woodlark	*Lullula arborea*

Species	Latin name
Wood sandpiper	*Tringa glareola*
Bottlenose dolphin	*Tursiops truncatus*
Harbour Porpoise	*Phocoena phocoena*
Grey seal	*Halichoerus grypus*
Harbour seal	*Phoca vitulina*
Sea lamprey	*Petromyzon marinus*
River lamprey	*Lampetra fluviatilis*
European eel	*Anguilla anguilla*
Atlantic salmon	*Salmo salar*
Barbastelle bat	*Barbastella barbastellus*
Blue mussel	*Mytilus edulis*
Sea trout	*Salmo trutta trutta*
Allis shad	*Alosa alosa*
Twaite shad	*Alosa fallax*

1. Introduction

This section provides background information on the legislative framework and context surrounding the Habitats Regulations Assessment required for the proposed Rampion 2 offshore wind farm.

1.1 Report overview

1.1.1 Habitats Regulations Assessment (HRA) is required under the Habitats Regulations for plans or projects that may affect European conservation sites. This Report to Inform HRA Screening (hereafter referred to as the HRA Screening Report) provides information to support a Screening assessment of the proposed Rampion 2 Offshore Wind Farm at the first stage of the HRA process, in accordance with the Habitats Regulations.

1.2 Rampion 2

1.2.1 Rampion Extension Development Limited (hereafter referred to as 'RED') is a joint venture between RWE Renewables, Enbridge and a Macquarie-led consortium. RED (the Applicant) intends to seek development consent to build a new offshore wind project, Rampion 2, adjacent to the existing Rampion Offshore Wind Farm (Rampion 1) project in the English Channel in the south of England. Rampion 1 was developed following The Crown Estate's Round 3 offshore wind leasing programme launched in 2008.

1.2.2 Rampion 2 would be located between 13km and 25km from the Sussex coast and would be cited to the southeast and west of Rampion 1 Offshore Wind Farm (OWF). Rampion 2 would comprise both onshore and offshore infrastructure associated with an offshore wind farm. This would include an array of wind turbine generators (WTGs) (and associated foundations) over an area of 315km², an electrical system comprising offshore substations, inter-array and export cables that lead to a landfall point at Climping, West Sussex and an onshore cable connection to the National Grid at Bolney Substation at Bolney, Mid Sussex.

1.3 Habitats Regulations Assessment

1.3.1 The Habitats and Birds Directives provide the European legal framework for the protection of wild fauna and flora and birds. Under EC Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive') and Council Directive 2009/147/EC on the conservation of wild birds (The Birds' Directive), a network of protected areas for certain habitats and species of conservation importance (those listed on Annexes I and II of the Directives) has been established by European Union (EU) member states; these areas are known as European sites. These sites comprise Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) and, as a matter of

Government policy, Ramsar sites listed under the provisions of the Ramsar Convention on wetland of international importance are given the same protection.[1]

1.3.2 The Conservation of Habitats and Species Regulations 2017 and Offshore Marine Habitats and Species Regulations 2017 (the Habitats Regulations) transpose the Directives into UK law. The Habitats Regulations require that an appropriate assessment of the implications must be made by the relevant competent authority if a project (or plan) is likely to have a significant effect on the Conservation Objectives of a European site, either alone, or in-combination with other plans or projects. HRA is generally understood to be a progressive, four stage process which determines Likely Significant Effect (LSE) and (where appropriate) assesses potential adverse impact on the integrity of a European site, examines alternative solutions, and provides justification of Imperative Reasons of Overriding Public Interest (Planning Inspectorate, 2017).

1.4 Offshore wind farm extensions

1.4.1 The UK government is committed[2] to deliver 40 gigawatts (GW) of offshore wind generating capacity by 2030 and a Net Zero greenhouse gases emissions target by 2050, which is predicted to require at least 75GW from offshore wind (Committee on Climate Change, 2019). The Crown Estate, as the managers of almost all of the seabed around England and Wales and Northern Ireland, has identified opportunities to expand existing OWF projects ('extensions') as an efficient means to increase the UK's installed capacity (The Crown Estate, 2019). In 2017, The Crown Estate invited proposals for such extension projects and in 2019, confirmed that a proposal to extend the existing Rampion 1 OWF, could, along with six additional extension projects, be awarded sea-bed development rights, subject to the necessary consents.

1.5 Plan level Habitats Regulations Assessment

1.5.1 The seven collective 'extension projects' comprise the 2017 Offshore Wind Extensions Plan (OWEP). Prior to confirming that the seven component projects of OWEP could progress to the award of rights, The Crown Estate completed a plan-level HRA for the project applications to assesses the possible implications of the proposed windfarm extensions on European sites. The plan-level HRA of OWEP was published in August 2019 (NIRAS Consulting Ltd, 2019). With reference to mitigation measures identified therein, the plan-level HRA concluded that while LSE could not be discounted, an extension of the Rampion 1 OWF (as part of OWEP) would not adversely affect the integrity of any European sites (The Crown Estate, 2019b). The conclusions of the plan-level HRA account for and direct the continuation of the HRA process. Further assessment of Rampion 2 is required as a matter of law, with reference to refined project information (The Crown Estate,

[1] Office of the deputy Prime Minister (ODPM) Circular 06/2005 'Biodiversity and Geological conservation – Statutory obligations and their impact within the planning system.
[2] E.G. National Policy Statement (NPS) for Energy (EN-1) (Department for Energy and Climate Change, 2011a) and the NPS for Renewable Energy Infrastructure (EN-3) (Department for Energy and Climate Change, 2011b) and the "net zero" target, the UK's Clean Growth Strategy.

2019). This report provides for part of the project-level assessment required under that process.

1.6 Wider planning framework

1.6.1 With a generating capacity of up to 1,200 megawatts (MW), Rampion 2 qualifies as a Nationally Significant Infrastructure Project (NSIP) under Section 15(3) of the Planning Act 2008. Rampion 2 is therefore consented through a Development Consent Order (DCO). The Planning Act 2008 (as amended) is the primary legislation that establishes the legal framework for applying for, examination and determination of applications for DCOs for NSIPs.

1.6.2 A number of environmental assessments are required to support the DCO application, including a project-level HRA. The HRA report will accompany the DCO application, alongside assessments produced under the Environmental Impact Assessment (EIA) Regulations (2017). Cross references are made within this report to the EIA Scoping Report for Rampion 2 (Wood, 2020) published in June 2020, ahead of this HRA Screening report, where design and supporting information are common to both assessments.

1.7 United Kingdom's exit from the European Union

1.7.1 As of 2020, the United Kingdom exited the EU, with 'Exit day' having occurred on 31 January 2020; with an 'Implementation Period' in place until 31 December 2020. It is understood that during the period 31 January 2020 until 31 December 2020 the Habitats Regulations will remain in force without any of the amendments relating to EU Exit made by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. As a result of provisions in the European Union (Withdrawal Agreement) Act 2020 these EU Exit-related changes to the Habitats Regulations are suspended until Implementation Period Completion Day. As such, this document has been drafted on the basis that all relevant legislation remains in place.

1.8 The purpose and structure of this report

1.8.1 This HRA report provides information to support the Secretary of State for Business, Energy and Industrial Strategy (BEIS), as the relevant Competent Authority, in undertaking a Screening assessment of the proposed Rampion 2 OWF under the Habitats Regulations. The objective is to determine whether and how the Rampion 2 OWF could result in LSE on European sites, acting either alone or in-combination with other plans or projects. If the potential for a significant effect cannot be discounted, an Appropriate Assessment (AA) of the implications for European site integrity will be required at the second stage of the HRA process.

1.8.2 This report documents a preliminary evaluation of the potential environmental effects associated with Rampion 2 against the Conservation Objectives of relevant European sites (those that could be significantly affected). A clear audit trail of the standards and parameters applied to the Screening exercise is provided. The

outcome is a clear determination of the European sites and effect-pathways for which LSE cannot be discounted and for which, a Stage two Appropriate Assessment (Stage 2, AA) is required.

1.8.3 The information provided by the Applicant in the HRA Screening report must ultimately be sufficient to support the Secretary of State's Screening assessment of Rampion 2. This iteration of the HRA Screening Report has been prepared by GoBe Consultants Limited (GoBe) and Wood Environment and Infrastructure Solutions UK Limited (Wood) on behalf of the Applicant to inform the pre-application consultation advised by the Planning Inspectorate (Advice Note 10) through to DCO application (Planning Inspectorate, 2017) and associated Evidence plan process.

1.8.4 This report is structured as follows:

- **Section 1**: Introductory paragraphs and background information;
- **Section 2**: Project Information - design parameters and programme;
- **Section 3**: Proposed approach to Screening (alone and in-combination);
- **Section 4**: Environmental baseline information relevant to Screening;
- **Section 5**: The outcomes of the European site selection process;
- **Section 6**: Consideration of project effect-sources and potential for LSE (Screening);
- **Sections 7** and **8**: Summary of results and conclusions.

1.8.5 Appendices that provide information to support this report are as follows:

- **Appendix A**: HRA Stage 1: Planning Inspectorate (PINS) Screening matrices.

2. The Proposed Development

This section provides an overview of the main components of Rampion 2 and activities associated with the construction, operation and maintenance and decommissioning phases, including key parameters, along with indicative timescales.

2.1 Overview of Rampion 2

2.1.1 The Applicant will seek development consent for an offshore wind farm development (Rampion 2), adjacent to the existing Rampion Offshore Wind Farm (Rampion 1) located in the Eastern English Channel in the south of England. Rampion 2 would be located within the area comprising both an extension area afforded an Agreement for Lease by The Crown Estate and extending across part of residual Round 3 Zone 6 offshore wind farm zone. The nearest coastal ports are Littlehampton, Worthing, Shoreham-by-Sea, Brighton and Newhaven.

2.1.2 An overview of the onshore and offshore components of Rampion 2 is provided below in **Sections 2.4** to **2.7**. Screening is based on Rampion 2 as described in the Scoping Report (published June 2020) (Wood, 2020) that preceded the publication of this report. However, only the information considered sufficient to inform Screening is reproduced in this section. At this early stage, this information is largely limited to a description of worst-case parameters for which, a precautionary stance has been adopted (see **Section 2.3**). On this information, European site identification and the determination of LSE is provisional. Subsequent HRA reporting will identify any changes to the Screening (and subsequent assessments) as Rampion 2 progresses through the iterative design, HRA, EIA and associated Evidence plan process.

2.2 Scoping Boundary

2.2.1 The components of Rampion 2 are separated into offshore and onshore elements. The Scoping Boundary used to inform this HRA Screening combines three 'Search Areas' for the offshore and onshore infrastructure associated with Rampion 2. The Scoping Boundary is defined as the area within which Rampion 2 and associated infrastructure could be located, including the temporary and permanent construction and operational work areas.

2.2.2 The Scoping Boundary comprises the wind farm array Area of Search (the Array), the Offshore cable corridor and the Onshore cable corridor (including substation locations), as illustrated in **Figure 2.1.** The Array and Offshore cable corridor Areas of Search may be collectively referred to as the Offshore components of the Scoping Boundary, where applicable.

2.2.3 The Scoping Boundary applied to the HRA Screening mirrors that used for the EIA Scoping Study. At the south west corner of the Rampion 1 array, there is a small area or 'bridge' included in the boundary to enable cabling requirements across the full area (**Figure 2.1**). To facilitate HRA Screening, this area has been

assumed to comprise part of the Array, however, no WTGs or substations would be located in the 'bridge' area.

2.3 Design envelope

2.3.1 The NPS for Renewable Energy Infrastructure (NPS EN-3) (DECC, 2011a) published in 2011 considers that due to the "complex nature of offshore wind farm development, many of the details of a proposed scheme may be unknown to the applicant at the time of application." These details could include; the precise location and configuration of turbines and associated development, foundation type, turbine tip height and the cable route. At this early stage, the description of Rampion 2 is indicative. A precautionary approach has therefore been applied to the HRA Screening and a 'design envelope' approach has been adopted, having regard to the Planning Inspectorate Advice Note Nine: Rochdale Envelope, July 2018 (Planning Inspectorate, 2018). The design envelope approach is widely used and accepted for major infrastructure projects in the UK, including for recent applications for offshore wind farms.

2.3.2 This approach assumes maximum design parameters that would not be exceeded by the final design. Through the application of these parameters to each anticipated impact the worst-case scenario will be assessed – ensuring that any impacts from the final scheme design will fall within that worst-case scenario (and therefore may well be less). Assessment using a parameter-based design envelope means that the assessment will consider a maximum design scenario, whilst allowing for flexibility and design evolution.

2.3.3 The proposed development must be defined adequately and based on a description of the location, design and size of Rampion 2 that is suitable to allow a comprehensive assessment of its likely significant environmental effects.

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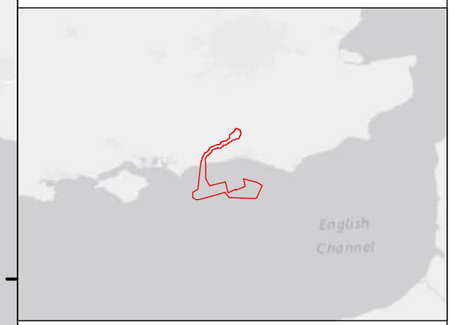
Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Key

- Scoping Boundary
- Array
- Offshore cable corridor
- Onshore cable corridor



Kilometres
0 20 40 80 120 160
1:4,000,000
WGS 1984 UTM Zone 30N Transverse Mercator

Rampion Extension Development

RWE

Rampion 2 Offshore Wind Farm

Figure 2.2 The Project's area of search comprising the Offshore Cable Corridor, the Array and the Onshore Cable Corridor

HRA Screening Report

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GOBE	CC	WOOD	03-Sep-20	FINAL

2.4 Rampion 2 components

2.4.1 It is anticipated that Rampion 2 would comprise the following components:

Offshore (the Array)

- Offshore wind turbine generators (WTGs) and associated foundations;
- inter-array cables with an installed capacity of up to 1200MW but not exceeding the number of WTGs installed at Rampion 1 and;
- up to three offshore substations.

Offshore (transmission)

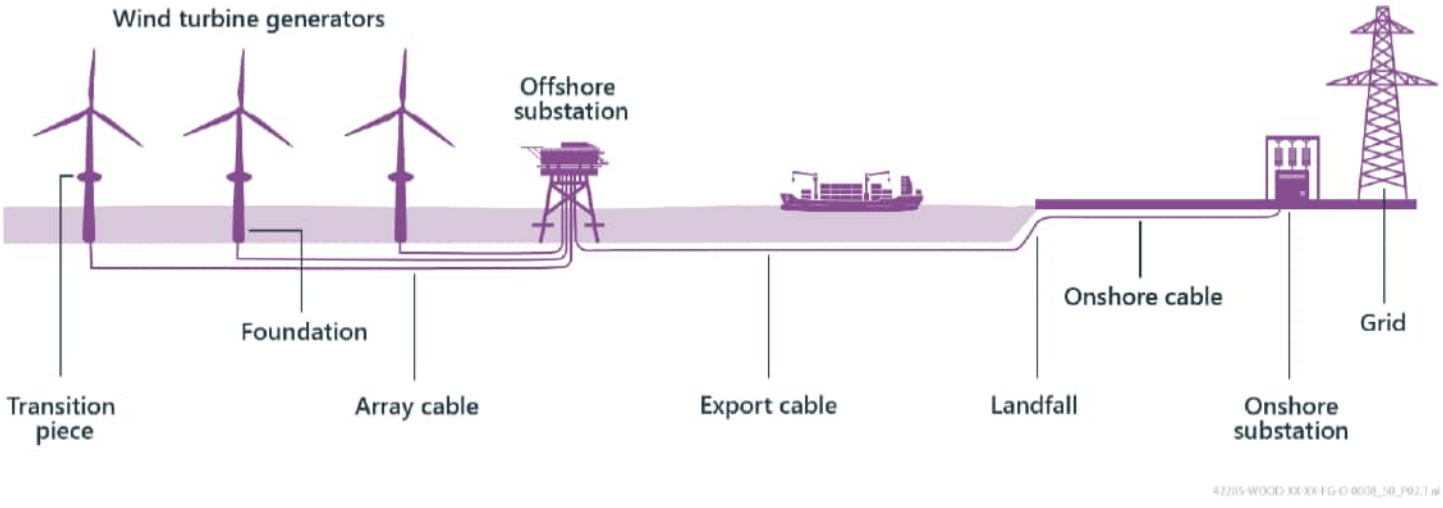
- Up to four offshore export cables installed, each in its own trench within the overall cable corridor and;
- a single landfall site delivered using Horizontal Directional drilling (HDD) installation techniques.

Onshore (transmission)

- Buried onshore cables in a single corridor approximately 36km in length; and
- a new onshore substation that will connect to the existing substation at Bolney, Mid Sussex.

2.4.2 The key components of Rampion 2 are illustrated in **Figure *2.2*** and described in more detail below.

Figure 2.2 Key components of Rampion 2



2.5 Offshore elements of Rampion 2

2.5.1 The offshore elements of Rampion 2 are situated within a combined Area of Search adjacent to the south east and west of the existing Rampion 1 OWF, approximately 13km to 25km offshore, occupying an irregular elongated area in the English Channel.

2.5.2 It is assumed that all offshore components would be fabricated off-site, stored at a suitable port facility and transported directly offshore as needed during construction.

The Array

2.5.3 The wind farm Array Area of Search has an approximate area of 315km^2. The key characteristics of the Array include up to 116 WTGS, inter-array cables and up to three offshore substations. The key offshore component parameters that can be confirmed at this stage are provided below.

Wind Turbine Generators

2.5.4 The WTGs would comprise a tower, a nacelle (housing a gearbox, generator, and transformer), a rotor, and turbine blades. As wind turbine technology is continually evolving, the size and capacity of the WTGs for Rampion 2 will be determined during the final design stage.

2.5.5 WTGS ranging from 10MW to 16MW will be the likely WTG options available. This provides a suggested maximum indicative range of between 116 (10MW) and 75 (16MW) WTGs. The number of turbines utilised for the Rampion 2 would not exceed those at Rampion 1. Scour protection material may be required around the base of some or all wind turbine foundations to protect from current and wave action ensuring structural integrity.

2.5.6 Screening has assumed, as a worst-case scenario, that the turbines could be located anywhere within the Array boundary over the maximum possible spatial extent. The component parameters for the WTGs are presented in **Table 2.1.**

Table 2.1 Wind turbine generator's component parameters

Parameter	Indicative design envelope
Rotor diameter	275m
Number of turbines	Up to 116 WTGs
Maximum tip height	Up to 325m
Air Gap above Highest Astronomical Tide (HAT)	Minimum air gap 22m

Wind turbine foundations

2.5.7 The type of wind turbine foundation will be determined from the results of geotechnical investigations, existing environmental sensitivities and final WTG selection. It is anticipated that more than one type of foundation could be used across Rampion 2. The results of preliminary engineering investigations indicate that several design options for the wind turbine foundations could be considered for Rampion 2 including monopiles; and jackets. Other solutions such as suction buckets may be used as an alternative to pin piles for securing the jacket to the seabed.

2.5.8 Each foundation type may require some form of seabed preparation which may include seabed levelling, ground reinforcement and removing surface and subsurface debris. If necessary, consent for boulder clearance and unexploded ordnance (UXO) removal will be sought in a future Marine Licence application, when geophysical survey data of suitable spatial resolution is available to identify and quantify UXO. The foundations will be fabricated offsite, stored at a suitable port facility and transported to site as needed. Specialist vessels will be needed to transport and install foundations.

2.5.9 Screening has assumed a worst-case scenario of potential impact with respect to the turbine foundations. For example, underwater noise levels that would be associated with pile driven foundations (for noise sensitive species).

Offshore substation(s)

2.5.10 It is anticipated that there would be up to three offshore substations associated with Rampion 2. The substations would transform generated electricity to a higher voltage for transmission to shore via export cables. The location and extent of the offshore substations will be confirmed through the detailed design process but would be located within the Scoping Boundary.

2.5.11 It is anticipated that each substation would comprise a topside platform installed on a foundation, typically a monopile or jacket type foundation. The substation platform would likely include generators and modular facilities for operational and maintenance activities, similar to the offshore substation for Rampion 1. The maximum design scenario for the offshore substations is presented in **Table 2.2.**

Table 2.2 Offshore substation maximum design scenario

Parameter	Indicative design envelope
Number of substations	Up to 3
Foundation type	Monopile or jacket

Array cables

2.5.12 Subsea array cables would be installed to connect the WTGs and the offshore substation(s). It is anticipated that the array cables would be installed via either ploughing, jetting, trenching, or post-lay burial techniques, depending on ground conditions along the specific cable route. The array cables would typically be

buried at a target burial depth of 1m below the seabed surface depending on the outcome of the cable burial risk assessment. The final depth of the cables would be dependent on the seabed geological conditions and the risks to the cable (for example from anchor drag damage). Cable installation may require some form of seabed preparation which may include boulder and/or sand-wave clearance.

2.5.13 The array cables will be 33 kilovolt (kV) or 66kV and the length of cable will be dependent on the distance between WTGs themselves, and the distance between the WTGs and offshore substations. The array cable length would be dependent on the distance between WTGs.

2.6 Offshore transmission

Export cable

2.6.1 Electricity from the offshore substation(s) would be transmitted via export cables to the transition joint bay located at the landfall on the shoreline. It is anticipated this would be via up to four circuits laid in separate trenches at different times and installed via either ploughing, jetting, trenching, or post-lay burial techniques, depending on ground conditions along the specific cable route. The exact routing of the export cables within the cable corridor will be determined during the detailed design of Rampion 2, with consideration of seabed conditions and any environmental sensitivities.

2.6.2 The onshore site selection process undertaken for Rampion 2 confirmed a landfall at Climping, West Sussex. As such, a broad offshore export corridor has been identified from this landfall to the western extent of Rampion 2 (the Offshore cable corridor). This corridor has been defined suitably wide to enable further refinement in due course as more detailed assessment, constraint mapping and consultation progresses. The Area of Search for the offshore export cables to connect the offshore wind farm area to the shore (the Offshore cable corridor) is approximately 74km^2 in extent.

2.6.3 The maximum design scenario for the export cable(s) is presented in **Table 2.3.**

Cable protection

2.6.4 The requirement for local scour protection will be considered in a Scour Protection Management Plan. Where possible, cable burial will be the preferred option for cable protection. Pending further information, the possible installation of cable protection (e.g. rock armour) is assumed for cables for HRA Screening.

Table 2.3 Export cable maximum design scenario

Parameter	Indicative design envelope
Export cable corridor extent	76km^2
Export cable rated capacity	Up to 275kV
Export cables/trenches	Up to 4

Parameter	Indicative design envelope
Fibre optic cables	Bundled into export cable
Number of cable crossings	No known third-party cable crossings. To be confirmed through consultation and further data gathering
Export cable trench depth	Target depth 1m dependant on risk assessment

Landfall

2.6.5 The potential landfall location (where the export cables would come ashore) has been identified at Climping in West Sussex. Construction of the landfall is anticipated to be via a trenchless technique such as Horizontal Directional Drilling (HDD), where possible. Each export cable would require one HDD which would be drilled from an onshore construction compound and will exit the seabed in an exit pit at a suitable location. Due to the nature of the landfall approach with shallow water, duct extensions may be required from the offshore end of the HDD. As a worst-case, pending further information, a trenching technique is assumed as the basis for HRA Screening.

2.7 Onshore elements of Rampion 2

2.7.1 The onshore elements of Rampion 2 relate to the onshore electricity grid connection from the point of Mean High Water Springs to connection with the National Grid transmission system. This would comprise the following key components:

- transmission cables defined in a cable corridor of approximately 36km in length; and
- a new substation that will connect to National Grid's substation at Bolney, Mid Sussex, for which there are currently a number of options under consideration.

2.7.2 The onshore scoping area includes the landfall area, cable route corridor and an area to identify a new substation within. The onshore component of the Scoping Boundary is approximately 2km wide along the cable corridor including a 1km buffer either side of the indicative potential cable centreline.

Onshore cable corridor

2.7.3 The onshore grid connection for Rampion 2 would be made via a buried cable along the entire length of the route. The onshore cable system would be installed in up to four trenches, with cables drawn through installed ducts. Other methods for cable installation such as HDD would be used as required to avoid or minimise potential effects.

2.7.4 The onshore cable route would be constructed in stages or sections along the route. The trenches would be excavated, the cable ducts laid, the trenches backfilled, and the reinstatement process commenced. At regular intervals along

the route, joint bays (subsurface structures) would be installed to enable the cable installation and connection process and enable electrical checks and testing to be carried out on the cable system during operation.

A temporary construction corridor incorporating temporary working areas would be established to provide access to construction traffic and provide storage space for excavated material. It is expected that the width of the cable construction corridor for surface trenching would be approximately 50m. The parameters for the onshore cable works are provided in **Table 2.4.**

Table 2.4 Onshore cable parameters

Parameter	Indicative design envelope
Onshore cable corridor extent	30 to 40 km
Cable corridor swathe width (construction only)	Up to 50 m
Number of cables (including fibre optics)	Up to 20
Number of ducts (including fibre optics)	Up to 20
Number of trenches	Up to 4
Depth to top of buried infrastructure (ducts)	Target depth 1 m dependant on cable burial risk assessment
Trenchless (HDD) crossings	To be identified

Onshore substation

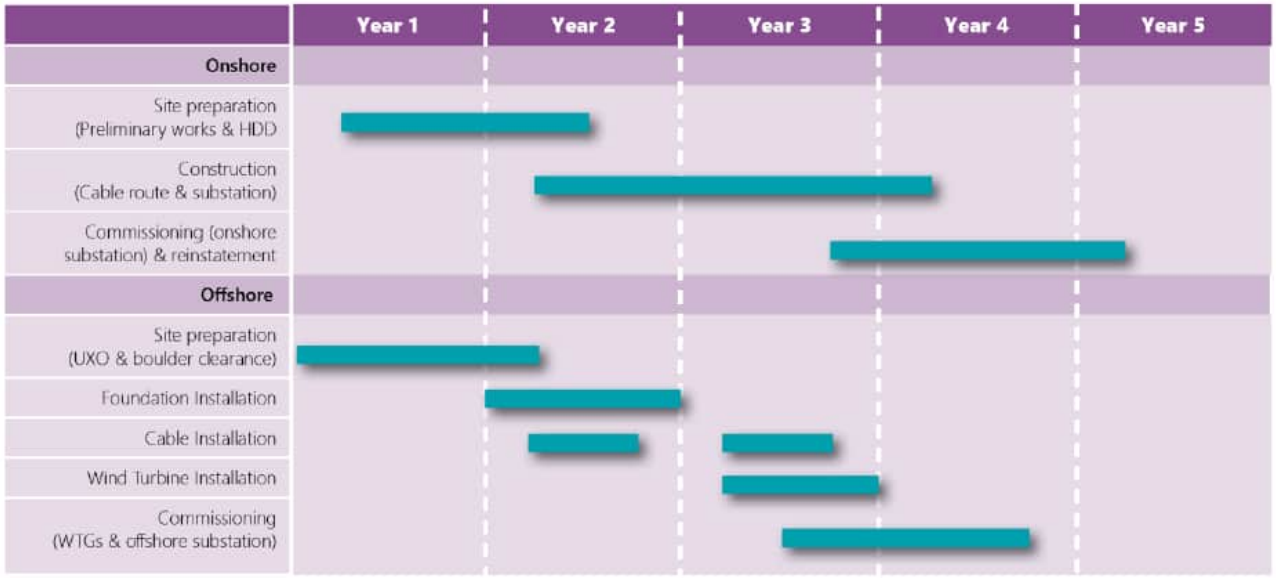
2.7.5 Rampion 2 would connect to the National Grid's Bolney substation in West Sussex. A new substation would be required on land in proximity (up to circa 5km) to the existing National Grid 400kV substation at Bolney. The overall site footprint for the proposed onshore substation is anticipated to be up to 4.5 hectares (ha), but the exact location of the substation is to be confirmed.

2.7.6 Construction works for the onshore substation would include creation of site access, site preparation works, installation of underground services and foundations, construction of the building, installation of electrical equipment, installation of perimeter fencing, and landscaping.

2.8 Construction programme

2.8.1 The duration of construction is anticipated to be up to five years. An indicative construction programme for Rampion 2 is shown in **Figure 2.3.**

Figure 2.3 Indicative construction programme



2.10 Operation and maintenance

2.10.1 The operational lifetime of Rampion 2 is assumed to be a minimum of 30 years. Drawing on experience gained in operating and maintaining Rampion 1, an operation and maintenance strategy will be finalised once the technical specifications of Rampion 2 are confirmed, including WTG model, design of electrical transmission infrastructure and final Proposed Development layout.

2.10.2 Maintenance activities would be undertaken for both preventive and corrective maintenance requirements. Operation and maintenance services will be undertaken via supply and crew vessels. During the operation of the onshore cable, periodic testing of the cable is likely to be required (every two-five years). This would require access to the link boxes along the cable route. This would involve attendance by up to three light vehicles, such as vans, in a day at any one location. The vehicles will gain access using existing field accesses and side accesses as agreed with landowners to reach the relevant sections of the cable.

2.10.3 The onshore substation will be designed to be unmanned during operation; however, some maintenance visits may be required. This would 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.

2.11 Decommissioning

2.11.1 A decommissioning plan and programme will be developed prior to construction and updated during operation of Rampion 2 to account for any changes to decommissioning best-practice and developments in technology.

2.11.2 The decommissioning of Rampion 2 is anticipated to involve the removal of all offshore infrastructure above the seabed, and the removal and reinstatement of the onshore substation site. Electrical cables will be left in-situ offshore and onshore to minimise environmental effects associated with removal. Further detail will be provided in the decommissioning plan.

2.11.3 The decommissioning works are likely to be undertaken in reverse to the sequence of construction works and involve similar levels of equipment. For all receptor groups considered in Screening (see **Section 6**), impacts during the project's decommissioning phase are considered likely to be similar to (or less than) those outlined for the construction phase. For this reason, and because it is not possible to predict the significance of effects against an unknown future baseline, the significance of decommissioning impacts is not addressed in this report.

3. Assessment Methodology

The proposed approach and methodology to identify relevant European sites (those potentially affected by Rampion 2 and evaluate potential Likely Significant Effects (acting both alone and in-combination) is outlined in this section.

3.1 Legislative context

3.1.1 The requirement to undertake HRA is provided by Section 63(1) of the Habitats Regulations that specifies that:

"A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which -

(a) is likely to have a significant effect on a European Site or a European offshore marine site (either alone or in combination with other plans or projects), and

(b) is not directly connected with or necessary to the management of that site,

must make an appropriate assessment of the implications of the plan or project for that site in view of that site's conservation objectives."

3.1.2 As Rampion 2 is not directly connected with or necessary to the management of a European site, a HRA of Rampion 2 is required.

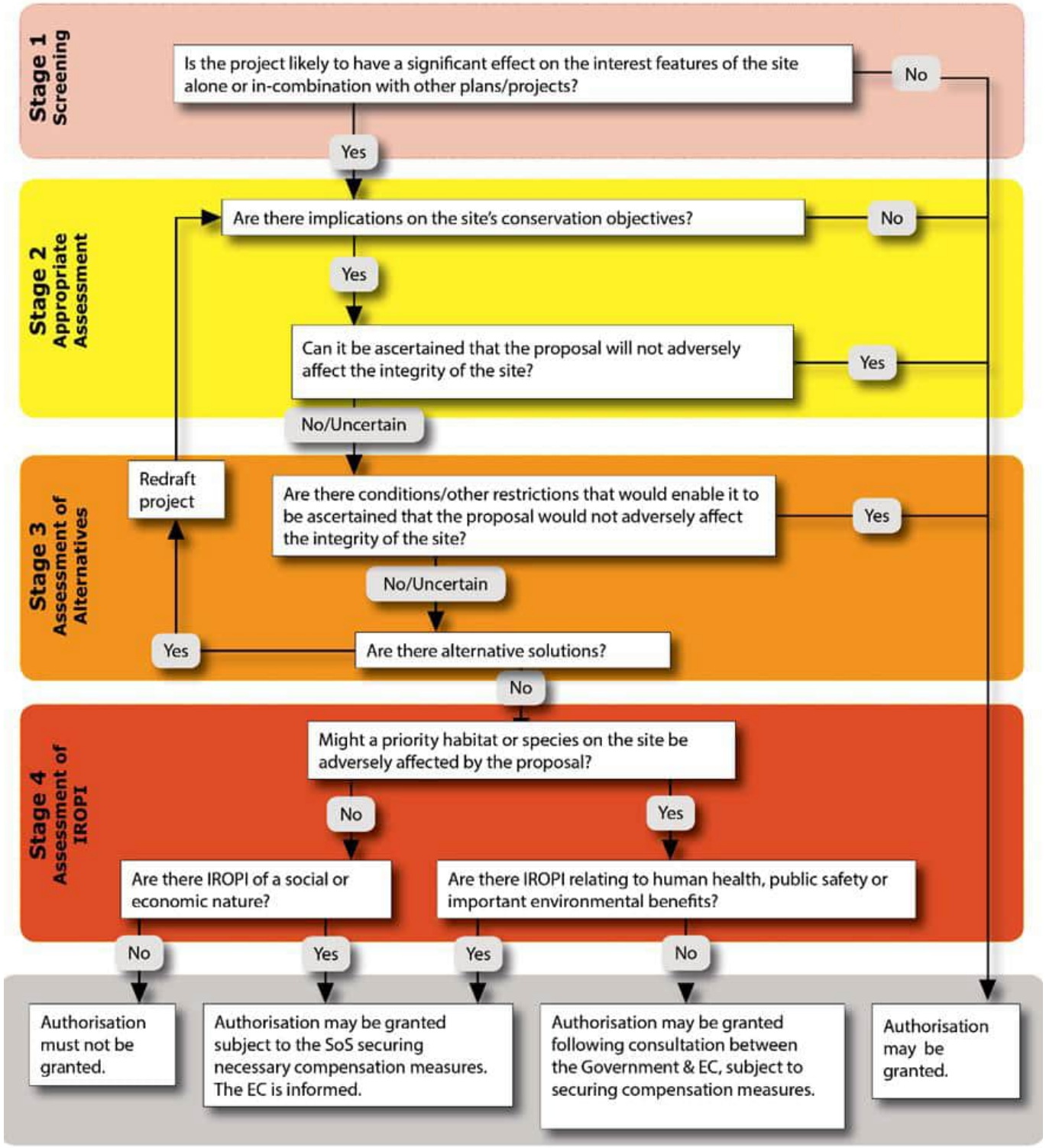
3.1.3 The Planning Inspectorate's Advice Note 10 (2017) outlines a progressive, four-stage process for HRA (see **Figure 3.1** and **Table 3.1).** The first of these stages (and the stage addressed in this report) is Screening. The purpose of the Screening stage is to consider all elements of Rampion 2 with the potential to have a significant effect on a European site (EC, 2018). If, on the best available information, LSE to European site(s) cannot be discounted, then an AA of the effect-pathway(s) to the site is required at HRA Stage 2, where the implications for European site integrity are considered.

Table 3.1 The four stages of the HRA process

Stage	
Stage one: Screening	The process which identifies the likely impacts upon a European site from a project or plan, either alone or in-combination with other projects or plans and considers whether these impacts are likely to be significant.
Stage two: Appropriate Assessment	The consideration of the impact on the integrity of the European site from the project or plan, either alone or in-combination with other projects or plans, with respect to the site's structure and function and its Conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.

Stage	
Stage three: Assessment of alternative solutions	the process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the European site. All reasonable alternatives must have been considered and assessed, and the least damaging option selected, to progress to Stage 4.
Stage four: Imperative Reasons of Overriding Public Interest (IROPI)/Derogation	Assessment where no alternative solutions exist, and adverse impacts remain. Assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed.

Figure 3.1 The four stages of the HRA process (The Planning Inspectorate, 2017)



3.2 Definition of European sites

3.2.1 The Habitats Regulations provide protection to Sites of Community Importance (SCIs), Special Areas of Conservation (SACs), Candidate SACs, (cSAC) and Special Protection Areas (SPAs). As a matter of Government policy[3] the assessment procedures described in this report also apply to possible SACs (pSACs), potential SPAs (pSPAs), Ramsar sites and proposed Ramsar sites and sites identified or required, as compensatory measures for adverse effects on any of the above sites, All of these sites are referred to as "European sites" (Planning Inspectorate, 2017).

3.3 Proposed approach to Screening

3.3.1 The proposed approach was developed with reference to EC guidance (e.g. EC, 2018), also, Advice Note 10 (Planning Inspectorate, 2017), including its checklist of the information required to support HRA Screening for NSIPs (Planning Inspectorate, 2017). The process to identify European features (and associated sites) to be considered in this report further adheres to the 'source-pathway-receptor' concept. Where a project effect-source can be connected (via a transmission pathway) to a sensitive European site feature (receptor), the feature's host site was considered at Screening.

3.3.2 A review of the design (and anticipated activities) of Rampion 2 (see **Section 2**) relative to the character of the receiving environment (see **Section 4**) was undertaken to determine potential effects and the potential transmission pathways to features for which European sites may have been designated. The receptor groups of relevance to the identification of European sites (benthic ecology, fish, seabirds, marine mammals and onshore ecology) are set out with reference to likely effects and overarching criteria to facilitate Screening in **Section 6.**

3.3.3 The approach takes into consideration the decision of the Court of Justice of the European Union in 'People Over Wind and Sweetman v Coillte Teoranta' (C323/17) (April 2018) (the Sweetman ruling) and where effects are likely in the absence of mitigation, it is determined that an AA should be undertaken.

3.4 European site selection process

3.4.1 For OWF developments, numerous effect-pathways are provided by species mobility. These pathways are complex, hard to identify and describe, and potentially distributed across a vast spatial scale. Therefore, in many cases effect-pathways are theoretical. To capture remote sites where species distribution or ranges provide connectivity (and there is no clear progression of pathways, but numerous possibilities), the method followed comprises two steps - an initial site selection process, followed by a refinement process.

3.4.2 During the initial site selection process (reported in **Section 5**), a 'long-list' of European sites is identified based on the theoretical potential for spatial

[3] The National Planning Policy Framework, paragraph 118 (February 2019. Ministry of Housing, Communities and Local Government)

connectivity. The significance of the pathways to the sites on the long list is considered in more depth (and beyond a theoretical spatial relationship) at the subsequent Screening stage.

3.4.3 At the Screening stage (reported in **Section 6** and the matrices at **Appendix A**), the potential for LSEs is considered and trivial or inconsequential risks are discounted. Both steps are necessary to meet the requirements of HRA for an auditable process that considers every risk and isolates the important ones.

3.5 European site selection criteria

3.5.1 The process to identify European sites for Screening is based on five 'site selection' criteria built around the sensitivities, ecological characteristics and specific behaviours of likely receptors and the type of European site that could be affected. The criteria consolidate the parameters for potential (and ecologically viable) connectivity between Rampion 2 and mobile receptors (pathways) and provides a method that applies to receptor groups, both on and offshore.

3.5.2 Theoretical connectivity to European sites for mobile species that use or traverse Rampion 2's direct sphere of influence (direct-effect footprint) is typically defined by species' foraging ranges, distribution or migratory corridors. For marine mammals, species management units (MU) define the spatial extent over which effects are considered.

3.5.3 The criteria used to identify European sites are set-out in **Table 3.2**. The outcomes of the European site selection process (the application of the five site selection criteria) are presented in **Section 5**.

3.5.4 It is recognised that impacts could result via impacts to undesignated supporting habitat or resources present within Rampion 2's sphere of influence. The potential for such effects cannot confidently be identified until technical reporting has been completed. In line with the iterative nature of the HRA process, should the potential for such effects be identified, these will be captured in subsequent reporting.

Table 3.2 Criteria used in the European site selection process

Criteria	Detail
Criteria 1A	European site(s) within the Scoping Boundary*
Criteria 1B	European site(s) with supporting, or functionally linked habitat located within the Scoping Boundary*
Criteria 2	European site(s) for qualifying mobile species whose range (e.g. foraging, migratory**, breeding or natural habitat range) may interact with Rampion 2's direct, or secondary zone of influence
Criteria 3	European site(s) with a feature located within the potential range of an effect associated with the Rampion 2, Hydrological connectivity (onshore) or indirect linkages could extend this range.
Criteria 4	European site(s) for qualifying species recorded during site specific surveys (that may either pass through the Scoping Boundary during migration or reside in the area over winter). Also, European sites for interest features that use that site in the non-breeding season and then occur in the region of the Scoping Boundary on migration (passage)***.

*note the Scoping Boundary includes the Array, offshore and onshore Search Areas.

**Only breeding birds are captured under criteria 3 with migratory bird species considered under Criteria 4.
*** Identified by the application of the information on migratory movements to and from the UK in the standard reference: Wright *et al.,* 2012

3.6 Consideration of Likely Significant Effects

3.6.1 For sites and features identified by the site selection process, consideration was given at Screening to each pathway for the potential for LSE to result. Initially, consideration is given to potential project effects acting alone; the approach to in-combination assessment is discussed in **Section 3.7.**

3.6.2 A LSE is an effect that may reasonably be predicted as a consequence Rampion 2 that would result in more than *'de minimis'* change and that may affect the Conservation Objectives of a habitat or species for which a European site is designated. 'Risk' in HRA terms, refers to a 'possibility' rather than a 'probability' and where there is any uncertainty as to the likelihood or significance of impacts, the EU's precautionary principle must apply, and the protection of the European site takes priority. The Stage one 'test of significance' is therefore, a low bar and Screening a relatively coarse filter to identify sites for which, on current information about Rampion 2, LSEs cannot be discounted.

3.6.3 For European sites considered at Screening (in **Section 6**), it has been concluded that either:

- Potential LSEs on European site feature(s) can be confidently discounted on current information and therefore, no further assessment is required (**no LSE**); or
- Potential LSEs on European site feature(s) cannot be discounted and therefore, a Stage 2 AA of the implications on site integrity may need to be undertaken by the Competent Authority (**potential for LSE**).

3.6.4 Significance was gauged against the Conservation Objectives (and target attributes) for the which the relevant sites were designated and with regard to the nature, scale, timing, duration, and magnitude of direct and indirect effects.

3.6.5 The outcomes from the Screening process were used to populate 'Stage 1 Screening Matrices' based on the template provided within Advice Note 10 (Planning Inspectorate, 2017). These matrices are available at **Appendix A.**

3.7 Consideration of Likely Significant Effects In-combination

3.7.1 The Habitats Directive recognises that whilst a project (or plan) may not result in LSE acting alone, it could result in LSE in-combination with other plans and projects. In-combination effects could result from persistent additions or losses of the same materials or resources, and /or, through the compounding effects of two or more effects (Bowers-Marriott, 1997). Advice Note Ten directs that an appraisal is required of the effects of any other plans or projects which, in-combination with the project might be likely to have a significant effect on a European site(s).

3.7.2 At this stage and given that construction is not planned to commence before 2027, it is not possible to accurately identify the plans and projects that need to be taken into consideration for any such in-combination assessment. Therefore, the approach taken in this Screening Report is to:

i. provide the proposed methodology for consideration of Rampion 2 effects in-combination with other plans and projects that would be applied at Stage 2 AA (for the sites for which LSE could not be discounted from effects acting alone); and

ii. identify the potential for LSE in-combination, and identity potentially relevant external plans and projects on current information.

Approach to in-combination at Stage 2 AA

3.7.3 The proposed approach to the in-combination assessment is guided by the UK Planning Inspectorate's 'Advice Note Seventeen: Cumulative Effects Assessment (CEA) Relevant to NSIPs (Version 2, August 2019) (Advice Note 17) (Planning Inspectorate, 2019). The initial scope of the HRA's in-combination assessment will be consistent with the shortlist of projects derived for the CEA compiled for the EIA. The approach will, however, differ in some key respects to ensure compliance with HRA requirements. For example, through the consideration of plans (as well as projects) and the relevant assessment thresholds. The final scope of the HRA in-combination assessment will ultimately be determined in consultation with local authorities and Statutory Nature Conservation Bodies (SNCB).

3.7.4 Advice Note 17 provides a list of 'project types' that should be included in the CEA and recommends the allocation of tiers to the project types to identify the limitations inherent in the assessment. These tiers reflect the level of detail likely to be available and therefore, the degree of certainty possible for the in-combination assessment (Planning Inspectorate, 2019). The approach is consistent with the Renewable UK Cumulative Impact Assessment Guidelines, specifically Guiding Principle 4 and Guiding Principle 7 (Renewable UK, 2013). A tiered approach assists the decision maker in placing relative weight upon the potential for each project/plan assessed in-combination to ultimately be realised, based upon the project/plan's current stage of maturity. The criteria used to assign project types to one of three tiers (Tier one (most certain) to Tier four (least certain)) is reproduced from Table 4.3 within Advice Note 17.

3.7.5 With reference to Advice Note 17, the Applicant will establish the potential for spatial and/ or temporal overlap between Rampion 2 and projects within the following categories:

- projects that are under construction;
- permitted application(s) not yet implemented;
- submitted application(s) not yet determined;
- all refusals subject to appeal procedures not yet determined;
- projects on the National Infrastructure's programme of projects; and
- projects identified in the relevant development plans and emerging development plans.

3.7.6 Such developments could relate (but are not confined) to the following types of major project and NSIPs:

- aggregate dredging and marine disposal areas;
- on and offshore energy;
- commercial fisheries;
- cables and pipelines;
- shipping;
- military, aviation and radar;
- coastal highways, streets, roads and bridges;
- mass transit, ports, airports, and airways;
- water supply, resource and wastewater management; and
- communications and utilities, including power transmission

3.7.7 A Tiered approach along the following lines would most likely be adopted for the in-combination HRA:

- Tier 1: Rampion 2 OWF considered alongside other projects/plans currently under construction and/or those consented and that hold a Contract for Difference (CfD) and have undergone final investment decision (FID) but are not yet implemented, and/or those currently operational that were not operational when baseline data was collected, and/or those that are operational but have an ongoing impact;
- Tier 2: Rampion 2 OWF considered alongside other projects/plans which have been consented but do not currently hold CfD;
- Tier 3: Rampion 2 OWF considered alongside projects/plans currently progressing through examination on the PINS Programme of Projects or national planning systems but have not yet achieved consent; and
- Tier 4: Rampion 2 OWF considered alongside projects/plans which appear on the PINS Programme of Projects or national planning systems but where the application has not yet been submitted for examination. Also, projects identified in development plans (and emerging development plans).

3.7.8 The likely range, magnitude and the significance of potential effects will be determined using the same criteria applied to the consideration of potential effects acting alone.

3.7.9 Tier 1 and potentially Tier 2 projects are likely to be of most relevance and it is expected that offshore, the most likely relevant plans and projects will concern other OWF developments and, for marine mammals, other activities resulting in underwater noise. Dependent on the timescale over which Rampion 2 OWF is brought forward, Tier 1 and Tier 2 project will likely comprise consented projects yet to be built and existing OWFs with operational impacts (e.g. collision risk to birds). OWF projects for which a planning application has been submitted but permission has not yet been granted may also feature.

3.7.10 **Table 3.3** summarises the OWF projects within Tiers 1 to 4, as of August 2020. There are four consented (but not constructed) projects and three currently in the planning process.

LSE in-combination

3.7.11 Given the highly precautionary method for site selection applied during this Screening assessment, the consolidation of information regarding external plans and projects would not likely result in additional European sites or new effect pathways being identified for the Screening assessment. However, the potential for LSE to arise in-combination (LSE in-combination (LSEI)) will be monitored as the Rampion 2 application progresses.

3.7.12 The potential for LSE in-combination to arise via the identified effect pathways has been identified in the Screening matrices at **Appendix A** for each phase of Rampion 2.

Table 3.3 Potentially relevant external projects, Tier status and status within the planning system

Project name	Current tier	Country	Status
Parc éolien en mer de Fécamp - 498 MW (71 turbines)	1	France	Pre-construction
Parc éolien en mer de Dieppe - Le Tréport 496 MW (62 turbines)	2	France	Consent authorised
Eoliennes Offshore du Calvados project (64 turbines)	2	France	Consent authorised
Projet éolien en mer de la Baie de Saint-Brieuc (62 turbines)	1	France	Pre-construction
L'éolien en mer région Dunkerque (troisième appel d'offres) 598 MW (46 turbines)	4	France	Concept/Early Planning
Greater Gabbard Extension 504 MW	4	UK	Concept/Early Planning
Galloper Extension 353 MW	4	UK	Concept/Early Planning

Note: The Thanet Extension has been excluded from this table on the basis that the Application was refused

3.7.13 Onshore, the scope of issues for the consideration of LSE in-combination effects would likely be restricted to the permanent or temporary loss of functionally linked land or disturbance related impacts during construction.

3.8 Consultation

3.8.1 The Planning Inspectorate's Advice Note 10 advises that consultation on the HRA should commence from the earliest stages of preparation onwards (such that it influences the evolution of the design), and the HRA report record HRA consultation responses clearly and distinctly from responses collated for other appraisals (Planning Inspectorate, 2017).

3.8.2 This first iteration of the HRA Screening report will provide an initial basis for the early, pre-application consultation directed by Advice Note Ten (Planning Inspectorate, 2017). The discussion of HRA matters, including the Screening process, will also take place in parallel through the Evidence Plan Process from the earliest stages. Where Rampion 2 has the potential to give rise to transboundary effects (where a Likely Significant Effect is identified), consultation would be conducted with the appropriate regulatory authorities.

3.8.3 A log of historical consultation contacts and responses will be provided in subsequent HRA reports.

4. Environmental baseline

This section provides an overview of the environmental characteristics relevant to the receptor groups of relevance to the identification of European sites (and under consideration as part of the HRA Screening process).

4.1 Introduction

4.1.1 In this section, a summary of relevant information to inform this HRA Screening exercise is provided for the receptor groups of relevance to the identification of European sites. Specifically:

- Subtidal and intertidal benthic ecology;
- Marine mammals;
- Offshore and intertidal ornithology;
- Fish ecology; and
- Onshore ecology.

4.1.2 The information presented here draws on the information provided in the Scoping Report (published June 2020) for Rampion 2 but does not replicate that information in full. A detailed description of baseline conditions within the Rampion 1 array and export cable corridor area is provided in the Environmental Statement Physical Environment chapter (ABPmer 2012a), the dedicated baseline description appendix (ABPmer 2012b), and the associated technical report (ABPmer 2012c).

4.1.3 Baseline information relevant to the determination of LSE relates to the Scoping Boundary and secondary impact Zone of Influence (ZoI), with proportionate focus. This includes information provided by Natural England, including mapping and available reports for relevant sites and in particular sensitive qualifying interests/special conservation interests described and their Conservation Objectives. Where relevant, information is drawn from a wider area (e.g. marine mammal data across species MU).

4.2 Benthic ecology

Data sources

4.2.1 The study area for the benthic subtidal ecology assessments is defined as the offshore Scoping Boundary together with the secondary impact ZoI informed by the tidal excursion extent and coastal processes modelling undertaken to inform the existing Rampion 1 EIA (ABPmer, 2012). Numerous existing sources of benthic subtidal and intertidal ecology data have been accessed to support assessments, as listed in the Scoping Report (RED, 2020). These data provide good data coverage across the Rampion 2 benthic subtidal ecology study area. These existing data sources will be supplemented with site-specific benthic

ecology surveys which will be undertaken across the Scoping boundary during the summer of 2020.

Baseline

Subtidal benthic ecology

4.2.2 Annex I biogenic blue mussel reef was recorded during the Rampion 1 characterisation study (EMU, 2010). Two types of Annex I bedrock reef are also known to occur through the inshore portion of the benthic subtidal ecology study area however, there are no European sites in the benthic subtidal and intertidal ecology study area. The closest SAC designated for Annex I habitats is approximately 20km west of the Scoping Boundary (South Wight Maritime SAC).

4.2.3 The HRA has considered habitats/species which are dependent on or associated with benthic and intertidal ecology. There are, for example, SPA and Ramsar sites with benthic habitats that support designated bird species which could be vulnerable to impacts on prey and species habitat loss. The closest of these sites is the Solent and Dorset Coast SPA, less than 1km from the Scoping Boundary.

4.2.4 The benthic subtidal ecology study area has been demonstrated to comprise of a mixture sands, muds and gravels which is typical of the wider region. The results of surveys across the existing Rampion 1 project, which included grab, DDV and trawl data from characterisation and pre-construction surveys, were used to describe the following biotopes (that have been identified within the Rampion 2 Scoping Boundary[4]:

- Infralittoral mobile clean sand with sparse fauna (JNCC code: SS.SSa.IFiSa.IMoSa; EUNIS A5.231);
- Sparse fauna on highly mobile sublittoral shingle (cobbles and pebbles) (SS.SCS.ICS.SSh; A5.131);
- Sparse fauna on highly mobile sublittoral shingle (cobbles and pebbles) (SS.SCS.ICS.SSh; A5.131);
- Mediomastus fragilis, Lumbrineris spp. and venerid bivalves in circalittoral coarse sand or gravel4 (SS.SCS.CCS.MedLumVen; A5.142);
- Flustra foliacea and Hydrallmania falcata on tide-swept circalittoral mixed sediment (SS.SMx.CMx.FluHyd; A5.444); and
- Spirobranchus triqueter with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles6 (SS.SCS.CCS.PomB; A5.141).

Intertidal Benthic Ecology

4.2.5 Existing intertidal habitat mapping (MagicMap) suggests the biotopes present within Climping Beach and the surrounding area primarily consist of intertidal sand and gravel. The eastern part of the offshore Scoping Boundary is dominated by finer sand (EUNIS A2.2). Coarser sediments, including gravel and cobbles (EUNIS

[4] both JNCC Marine Habitat Classification and EUNIS codes are presented

A2,1 and A5.1), are the most abundant habitats present in the central areas and to the west. Occasional rocky areas (EUNIS A1) occur.

4.3 Marine mammals

Data sources

4.3.1 Data for the marine mammal baseline has been sourced from available survey reports together with an initial desk-based review of literature and existing data sources. The Scoping Report (Wood, 2020) lists over 12 data sources that have been used to describe the marine mammal baseline, including aerial surveys, boat-based surveys, Seawatch Foundation data and seal usage maps. These data provide details of the coverage of Rampion 2 and, where relevant, the wider study areas.

4.3.2 The marine mammal evidence base is expanding with new data becoming available through ongoing Rampion 2 aerial surveys and relevant research projects on marine mammals in the UK. For example, the Strategic Environmental Assessment (SEA) in relation to Offshore Energy plans has funded a significant number of marine surveys and research projects to improve the information base for marine mammals (DBEIS, 2019). Rampion 2 monthly aerial surveys commenced in April 2019 and are scheduled to cover a two-year period in total.

Baseline

4.3.3 The broadscale marine mammal data available clearly shows that the eastern English Channel (east of the Isle of Wight to Dungeness) typically holds a relatively low density and diversity of cetacean species. The Rampion 2 surveys conducted and reported to date (January 2020) reveal a low abundance and diversity of marine mammal species.

4.3.4 Harbour porpoise are the species most commonly found, although the densities reported are relatively low in the English Channel (Heinenan and Skov, 2015).

4.3.5 Bottlenose dolphin may also be found in the wider English Channel and bottlenose dolphin encounters occurred at various points throughout the year during the Rampion 1 surveys.

4.3.6 Both harbour and grey seals can be observed within the English Channel, albeit at typically lower numbers than other areas of the UK. Sightings of seals (grey, common and unidentified) occurred in all areas within the surveyed area, all with sightings of single animals.

4.3.7 The closest location where harbour seals are likely to haul out is around the Solent and adjacent harbours, where low numbers of harbour seal hauled out have been counted (5-23 individuals, SCOS, 2018). Seal tagging data (Russell *et al*., 2017) indicates low harbour seal densities at sea in the English Channel, being less than 1 individual/km2. In the UK, the closest grey seal haul-out sites to Rampion 2 (SCOS, 2018) are found at two infrequently surveyed locations in south Devon (total SW England grey seal pup numbers in 2015 were 350) and to the east of Dover (no numbers provided).

4.3.8 Grey seal tagging data indicates a degree of connectivity between grey seals towards the western end of the English Channel and those towards the eastern end of the English Channel, but not connectivity east to west (Vincent *et al.,* 2017). Seal tagging data (Russell *et al.,* 2017) indicates low grey seal densities at sea in the English Channel, being less than 1 individual/km2.

4.4 Offshore and intertidal ornithology

Data sources

4.4.1 A variety of data sources have been used to inform the ornithological baseline; these are fully detailed within section 5-8 (Table 5.8.1) of the Scoping report (Wood, 2010). There is no monitoring data available for Rampion 1 as monitoring was not a requirement of the Deemed Marine Licence. The key sources of ornithology data used to characterise the study area for offshore and intertidal bird species include existing literature and survey data (e.g. survey data from the British Trust for Ornithology (BTO)) and data from boat-based and aerial surveys under taken between 2010 – 2011 across the Rampion zone (and 5km buffer plus an adjacent control zone to the east of Rampion).

4.4.2 The most detailed and up-to-date site-specific data on offshore ornithology available were obtained from the first 12 months of digital aerial surveys completed by APEM Ltd between April 2019 and March 2020[5]. These surveys comprised digital aerial survey undertaken on a monthly basis over the Rampion 2 array part of the Scoping Boundary and a 4km buffer. The baseline will be supplemented following the second year of these surveys.

Baseline

4.4.3 Sites which may have qualifying features with connectivity to Rampion 2 include those designated for breeding seabirds and those for terrestrial, coastal or marine bird interests (typically migratory and / or non-breeding aggregations).

4.4.4 The key seabird species recorded within the Rampion 2 Scoping Boundary from year 1 digital aerial surveys are listed in **Table 4.1** and provide an initial insight into key species likely to be present at Rampion 2 based on one year's survey effort.

4.4.5 Of the species listed in **Table 4.1** the main species of interest for offshore ornithology are gannet, herring gull, great black-backed gull, guillemot and razorbill. Further Important Ornithological Features (IOFs) may be identified following the first year of site-specific aerial digital surveys and additional species have been added as IOF to accord with the findings of the desk-based study. The current list of IOF for Rampion 2, including inter-tidal species likely present (identified with reference to BTO NEWS data) at landfall, are presented in **Table 4.2.**

4.4.6 During the non-breeding season, the region supports numerous species; divers and seaducks reside in more inshore waters, while auks are found further

[5] Due to COVID-19 related issues, the April offshore ornithological survey was completed in late March. This was agreed with and approved by Natural England.

offshore. The English Channel is also subject to pronounced passages of birds during spring and autumn with gannets, skuas, gulls, terns and auks travelling to and from the North Sea. It is also subject to migratory movements of non-seabirds moving from the UK to mainland Europe such as waders, wildfowl, passerines and non-passerines.

Table 4.1 Seabirds recorded within the Rampion 2 Scoping Boundary from year 1 digital aerial surveys (APEM Ltd).

Species	Highest abundance estimates (from year 1 digital aerial surveys (and month recorded))
Red-throated diver	21 (April 2019)
Fulmar	1 (April 2019 and February 2020)
Gannet	108 (August 2019)
Storm petrel species	9 (October 2019)
Herring gull	950 (July 2019)
Lesser black backed gull	40 (March 2020)
Great black backed gull	111 (March 2020)
Common or Arctic Tern	19 (September 2019)
Sandwich tern	18 (August 2019)
Kittiwake	833 (February 2020)[6]
Common gull	221 (February 2020)[6]
Little gull	18 (October 2019)
Guillemot	5768 (February 2020)[6]
Razorbill	2472 (February 2020)[6]

[6] It is acknowledged that these species have been recorded in relatively high numbers during the February survey, considering the location of the site. The February survey was undertaken following a period of very high winds from the south east which coincided with movements of these species on their northward migration. It is therefore likely that those birds which were migrating at a greater distance offshore, and beyond the Rampion 2 scoping boundary during this period, were forced into the inshore waters along the south coast and were recorded by the survey. A more realistic overview of seabird abundance will be gained considering inter-annual variability following the second year of survey and presented in future documents.

Intertidal

4.4.7 With regard to ornithology within the intertidal region of the south coast, a number of species are likely to be reliant on local habitats. A review of the BTO NEWS survey data covering the area of interest along the West Sussex Coast and Climping Beach (where the cable landfall is proposed) has provided indication of bird species present within the intertidal over a prolonged period of time. These species are presented in **Table 4.2.** The species listed are subject to change following the results of the ongoing digital aerial surveys and stakeholder consideration.

Table 4.2 Summary of Important Ornithological Features (IOFs) (Birds Directive Migratory Species, Birds Directive Annex I,) for Rampion 2

Species identified as an IOF
Dark-bellied Brent goose*
Mute swan*
Wigeon
Teal
Red-breasted merganser
Little grebe
Great crested grebe
Oystercatcher
Grey plover
Ringed plover
Curlew
Turnstone
Sanderling
Dunlin
Redshank
Kittiwake
Black-headed gull
Little gull
Mediterranean gull

Species identified as an IOF
Great black-backed gull
Common gull
Herring gull
Lesser black-backed gull
Sandwich tern
Little tern
Common tern
Arctic tern
Guillemot
Razorbill
Red-throated diver
Gannet
Cormorant
Grey heron

4.5 Fish and shellfish

Non-migratory

4.5.1 A review of a number of relevant data sources has been undertaken to inform **Section 5.4** (Fish and Shellfish ecology) of the Scoping Report, which includes a baseline description for fish and shellfish receptors within the study area, defined as the offshore Scoping Boundary together with the Zone of Influence for coastal processes (extending a precautionary 15km around the Array).

4.5.2 A review has been undertaken to identify designated sites in the study area which are either designated for fish and shellfish interest or habitats / species which are dependent on or associated with fish or shellfish. Solent and Dorset Coast SPA (approximately 1km from the Offshore cable Corridor is noted as a designation for common tern, sandwich tern and little tern of which sandeel are a key prey species.

Migratory

4.5.3 Migratory fish are fish that spend part of their life cycle in freshwater and part in Seawater. European eels (a Ramsar protected species) have the potential to occur in both intertidal and subtidal environments of the study area although in low

densities. Shad ascend rivers to spawn and are known to occur off the coast of Sussex. Teleosts of conservation importance that have the potential to occur within fish and shellfish study area include, sea trout, European eel, smelt, allis shad and twaite shad.

4.6 Onshore ecology

Data sources

4.6.1 A data gathering exercise of existing information was undertaken to inform the terrestrial ecology baseline. This included nature conservation data for SACs and possible SACs searched for inside and within 12km of the onshore element of the Scoping Boundary.[7] Also, SPAs, proposed SPAs, Ramsar sites and proposed Ramsar sites within 10km of the onshore element of the Scoping Boundary.[8] A summary of the information provided from the various sources accessed is reported in full in chapter 6.6 of the Scoping Report.

4.6.2 Field survey is proposed to take place within 2020 and 2021 to inform the next phases of the Rampion 2. The programme includes a range of survey types for habitats, species groups and individual species. This will allow for potential designated features of European sites to be identified (e.g. Annex I habitats and Annex II species that could be associated with an SAC), as well as functionally linked land.

Baseline

4.6.3 The land within the Scoping Boundary is approximately 9,698ha in extent and does not overlap with any European site boundary. The land is dominated by agricultural habitats (both arable and pasture), although there are frequent areas of woodland including extensive areas of both semi-natural broadleaved woodland and plantation woodland. There are also several rivers including the River Arun and River Adur. There is a total of 621 water bodies within the Scoping Boundary, with the vast majority being less than a hectare in extent.

4.6.4 Species reported within the onshore Scoping Boundary include birds such as Bewick's swan and dark-bellied brent goose, mammals such as barbastelle and otter and invertebrates including Ramshorn snail. Much of the habitat present is subject to intensive agriculture and therefore the distribution and use of the landscape by these, and other species potentially linked to European sites is highly likely to reflect land use patterns. For example, bat interest is most likely associated with the patches of broadleaved semi natural woodland (much of which qualifies as Ancient Woodland), the river valleys and well-established hedgerows.

4.6.5 There are several locations where large aggregations of over-wintering birds are regularly recorded during the BTO's regularly undertaken Wetland Bird Survey.

[7] To reflect recommendations in the Draft Sussex Bat Special Area of Conservation: Planning and Landscape Enhancement Protocol (also known as the "Draft Sussex Bat SAC Protocol) (2018)

[8] Reflecting the upper foraging distances of dark-bellied Brent geese (Summers & Critchley, 1990) and Bewick's swan (Robinson et al. 2004) from roost locations.

These are associated with the flood plain and linked habitats of the River Arun and River Adur and include species such as wigeon, gadwall, shoveler and black-tailed godwit.

5. European site selection process

The outcomes of the European site selection process and the sites identified to undergo consideration for Likely Significant Effects at step two of the Screening process are summarised in this section.

5.1 Summary of outcomes

5.1.1 A total of 148 European sites (50 SAC/SCIs, 79 SPAs and 19 Ramsar) were identified under the site selection criteria as listed below. Some European sites qualified under more than one criterion:

- No European sites identified under criteria 1A; five European sites identified under 1B;
- 78 sites (46 SAC/SCI, 26 SPAs and 6 Ramsar) identified under criteria 2 (44 of the SAC/SCIs refer to SACs for marine mammals within the respective MUs);
- 16 sites (6 SAC, 5 SPAs and 5 Ramsar) under criteria 3
- 63 sites (50 SPAs and 13 Ramsar) identified under criteria 4.

5.1.2 The above European sites were taken forward for consideration in the Screening exercise. **Figure 5.1** through to **Figure 5.9** present the sites identified under criteria 1 to 3. A summary of all 148 sites identified is provided in **Table 5.7.**

5.2 Criteria 1

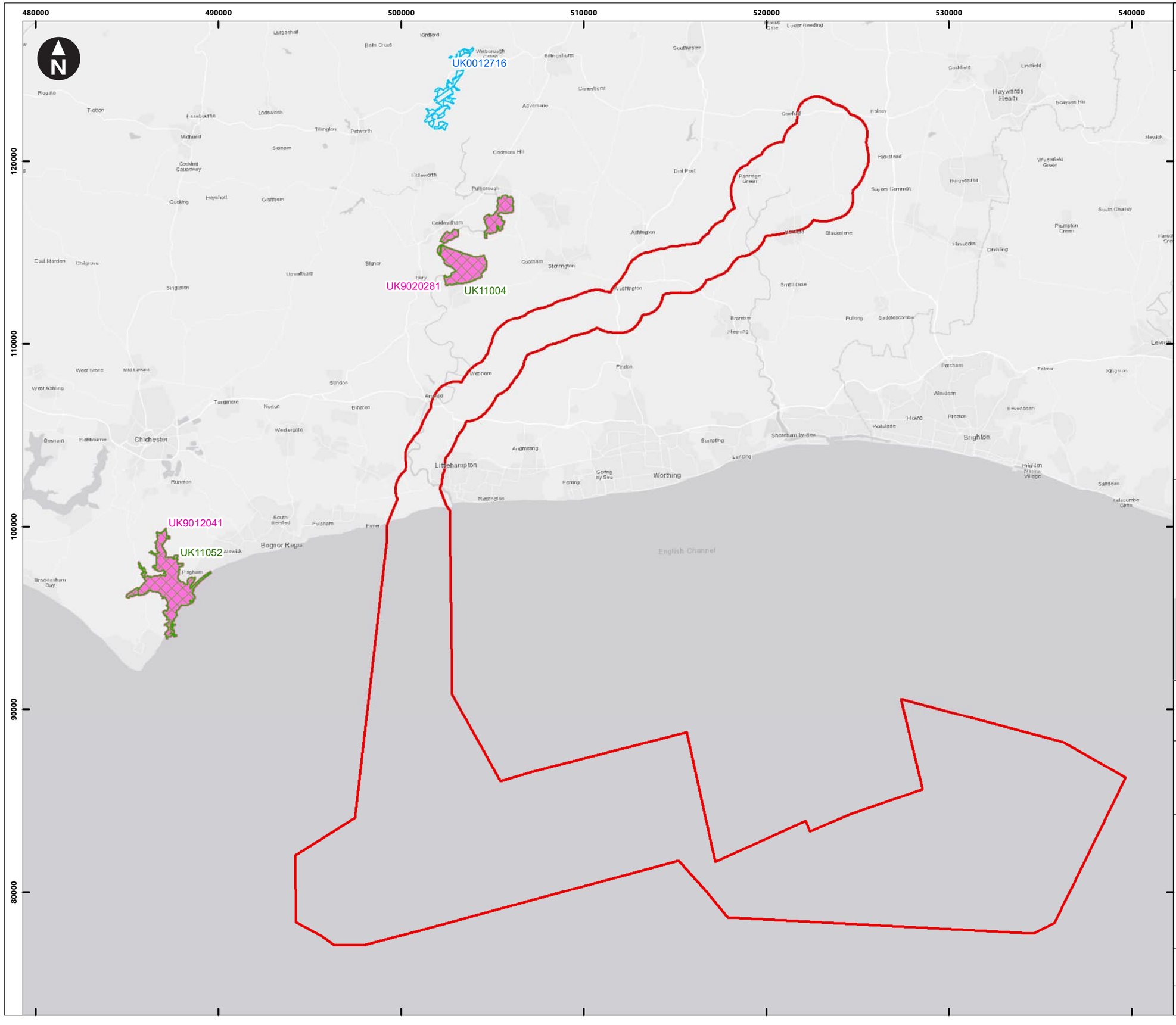
5.2.1 No European sites were identified under criteria 1A as there is no direct spatial overlap between the Scoping Boundary and any European site. However, five European sites (three SAC and two Ramsar) were identified under Criteria 1B due to the overlap of functionally linked habitat for terrestrial species with the Onshore cable corridor, these are summarised in **Table 5.1** below and depicted in **Figure 5.1.**

Table 5.1 European sites identified for Screening under Criteria 1B

European site	Relevant features*	Basis for qualification under relevant criteria
Arun Valley Ramsar	Northern pintail Waterbird assemblage (including wigeon, shoveler, teal)	Criteria 1B - the habitats that northern pintail, wigeon, teal and shoveler may use for foraging during the winter period are present within the Scoping Boundary (Onshore cable corridor). A 500m overlap of functionally linked land is assumed based on upper limit of potential low-level noise effects from the Waterbird Mitigation Toolkit (Cutts, Hemingway and Spencer, 2013).

European site	Relevant features*	Basis for qualification under relevant criteria
Arun Valley SPA	Bewick's swan Waterbird assemblage (including wigeon, shoveler, teal)	Criteria 1B - the habitats that Bewick's swan, shoveler, teal and wigeon may use for foraging during the winter period are present within the Scoping Boundary (Onshore cable corridor).
Pagham Harbour Ramsar	Dark bellied Brent geese	Criteria 1B – A 450m overlap of functionally linked land is assumed based on HSE guidance (1997) for minimum lighting requirements for construction work which establishes lighting would extend 20m, and an average of 50m. Headlights from vehicles associated with construction and those of commuting workforce have potential to reach 450m (Pocock and Lawrence, 2005)
Pagham Harbour SPA	Dark bellied Brent geese	
The Mens SAC	Barbastelle bat	The habitats that barbastelle may use for foraging are present within the Scoping boundary (Onshore cable corridor)

* Only European site features to which an effect-pathway has been identified are listed in this table



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Key

- Scoping
- Special Area of Conservation
- Special Protection Area
- Ramsar

Kilometres

0 1 2 4 6 8

1:200,000

British National Grid Transverse Mercator

Rampion Extension Development

RWE

Rampion 2 Offshore Wind Farm

Figure 5.1 European sites identified for screening under Criteria 1B (where the Scoping Boundary overlaps with functional habitat)

HRA Screening Report

System Identifier:	Version:
42285-WOOD-PE-CC-FG-O8-9578	1.0

Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WOOD	POLAI	WOOD	03/09/2020	Final

5.3 Criteria 2

5.3.1 Criteria 2 is used to identify connectivity to European sites where the Scoping Boundary has spatial overlap with the range of one or more of its designated features. This range is typically defined by a research-based foraging range, or in the case of cetaceans, the species management units provided by the Joint Nature Conservation Committee (JNCC). All European sites within the identified range (or parameter) are identified for Screening. Relevant receptors were identified with reference to the baseline environment (see **Section 4**) and the anticipated nature of activities (see **Section 6**). The respective ranges applied to Screening are identified in **Table 5.2** below.

5.3.2 For the assessment of potential offshore wind farm impacts to breeding seabirds, the ranges provided in Woodward (*et al*.) 2019 are considered to provide the current standard for seabird foraging ranges used for HRA Screening. The ranges supplied therein supplement the ranges provided in Thaxter (*et al*.) 2012, which previously provided the industry standard tool for identifying connectivity to European sites. The Woodward (*et al.),* 2019 ranges applied in this assessment (as set out in **Table 5.2**) include, in many cases, over double the number of records compared to the previous ranges applied to determine theoretical connectivity to site for breeding seabirds (i.e. Thaxter (*et al.,* 2012). This is considered to provide a more robust assessment of species-specific foraging ranges, and therefore, no additional range is provided to cover the standard deviation value, which is high in some cases.

5.3.3 The European sites identified via Criteria 2 are shown in **Table 5.3** and presented in **Figure 5.2** to Figure 5.8. Only European site features to which an effect-pathway has been identified are listed in **Table 5.2.** All site features are, however, addressed in the Screening matrices at **Appendix A.**

Table 5.2 Receptor ranges applied to identify sites for consideration at Screening for mobile species

Receptor	Identified range / parameter	Reference
Harbour porpoise	The North Sea Management Unit (NS MU), together with consideration of potential for site connectivity.	Inter-Agency Marine Mammal Working Group (IAMMWG, 2015)
Bottlenose dolphin	The Offshore Channel, Celtic Sea and South West England (OCSW MU), together with consideration of potential for site connectivity.	Inter-Agency Marine Mammal Working Group (IAMMWG)

Receptor	Identified range / parameter	Reference
Grey seal	145 km, together with consideration of potential for site connectivity.	Thompson *et al.,* 1996
Harbour seal	120 km, together with consideration of potential for site connectivity.	SMRU, 2011
Migratory fish	Consideration at Screening of estuarine SACs (and any subsequent upriver SACs) for Annex II designated (and dependent features (i.e. Freshwater pearl mussel) located within a 100km buffer of the Array.	This is a precautionary value considered to be a reasonable objective range for the identification of risks to migratory fish passage.
Barbastelle bats	12 km	This is the maximum impact zone identified by Natural England in the "Sussex Bat Special Area of Conservation - Planning and Landscape Enhancement Protocol" for bats (Natural England and South Downs National Park Authority, 2018)
Northern pintail[9]	18.5km	Reflecting the upper foraging flight distances of this species (Johnston *et al*. 2014)
Waterfowl species within the Arun Valley (shoveler, teal and wigeon)[10]	3.5km	Reflecting the upper foraging flight distances of these species (Johnston *et al.* 2014)
Bewick's swan[11]	10km, together with consideration of potential for site connectivity.	Reflecting the upper foraging distance between roost site and feeding areas for Bewick's swan (Robinson *et al*. 2004)

[9] *this pathway relates to an onshore interaction as this species does not forage out to sea
[10] *this pathway relates to an onshore interaction as this species does not forage out to sea
[11] *this pathway relates to an onshore interaction as this species does not forage out to sea

Receptor	Identified range / parameter	Reference
Dark-bellied Brent goose[12]	10km, together with consideration of potential for site connectivity.	Reflecting the upper foraging distance between roost site and feeding areas for dark-bellied Brent goose (Summers & Critchley, 1990)
Arctic tern *	25.7km (mean max foraging)	Woodward *et al.*, 2019
Black-headed gull *	18.5km (mean max foraging)	Woodward *et al.*, 2019
Common gull *	50.0km (mean max foraging)	Woodward *et al.*, 2019
Common tern *	18.0km (mean max foraging)	Woodward *et al.*, 2019
Cormorant *	25.6km (mean max foraging)	Woodward *et al.*, 2019
Fulmar *	542.3km (mean max foraging)	Woodward *et al.*, 2019
Gannet *	315.2km (mean max foraging)	Woodward *et al.*, 2019
European storm petrel *	336km (mean max foraging)	Woodward *et al.*, 2019
Mediterranean gull *	20km (mean max foraging)	Woodward *et al.*, 2019
Kittiwake *	156.1km (mean max foraging)	Woodward *et al.*, 2019
Lesser black-backed gull *	127.0km (mean max foraging)	Woodward *et al.*, 2019
Great black-backed gull *	73.0km (mean max foraging)	Woodward *et al.*, 2019
Guillemot *	73.2km (mean max foraging)	Woodward *et al.*, 2019
Herring gull *	58.8km (mean max foraging)	Woodward *et al.*, 2019

[12] *this pathway relates to an onshore interaction as this species does not forage out to sea

Receptor	Identified range / parameter	Reference
Razorbill *	88.7km (mean max foraging)	Woodward *et al.,* 2019
Sandwich tern *	34.3km (mean max foraging)	Woodward *et al.,* 2019
Little tern *	5.0km (mean max foraging)	Woodward *et al.,* 2019
Roseate tern *	12.6km (mean max foraging)	Woodward *et al.,* 2019
Shag *	13.2km (mean max foraging)	Woodward *et al.,* 2019
Puffin *	137.1km (mean max foraging)	Woodward *et al.,* 2019
Manx shearwater *	1346.8km (mean max foraging)	Woodward *et al.,* 2019

*For offshore ornithology, criteria 2 only applies to interest features during the breeding season, since it is only at that part of the year that a numeric range can be stated based on foraging distances from European sites.

Table 5.3 European sites identified under criteria 2, where spatial overlap has been established between a relevant Search Area and the range (as defined in Table 5.2) of a mobile qualifying interest feature.

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
Special Areas of Conservation / Sites of Community Importance					
***Figure* 5.8**	The Mens SAC (UK) UK0012716	Barbastelle bats	35.2	20.7	11.0
Figure 5.5 ***Figure 5.6***	Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC / SCI (FR) FR3102004	Grey seal, harbour seal	73.6	107.6	96.9
Figure 5.7	Littoral Cauchois SAC FR2300139	Grey seal Sea lamprey River lamprey Twait shad	94.4	117	131
Figure 5.3 ***Figure 5.4*** ***Figure 5.5*** ***Figure 5.6***	Récifs et marais arrière-littoraux du Cap Lévi à la Pointe de Saire (FR) FR2500085	Harbour porpoise, bottlenose dolphin, grey seal, harbour seal	101.6	108.5	124.1

[13] For offshore ornithology, criterion 2 only applies to interest features during the breeding season, since it is only at that part of the year that a numeric range can be stated based on foraging distances from European sites. Therefore, “relevant species” only refers to *breeding* seabird/ marine bird species as features of the site. For a comprehensive list of each sites features, please see Appendix A.

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
Figure 5.3 ***Figure 5.5*** ***Figure 5.6***	Recifs Griz-Nez Blanc-Nez SAC (FR) FR3102003	Harbour porpoise, grey seal, harbour seal	103.4	137.2	115.0
Figure 5.3 ***Figure 5.5*** ***Figure 5.6***	Baie de Canche et Couloir des trois estuaries SAC (FR) FR3102005	Harbour porpoise, grey seal, harbour seal	106.9	141.0	126.9
Figure 5.5 ***Figure 5.6***	Estuaire de la Canche, dunes picardes plaquées sur l'ancienne falaise, forêt d'Hardelot et falaise d'Equihe SAC/SCI (FR) FR3100480	Grey seal, harbour seal	112.2	146.4	128.4
Figure 5.5 ***Figure 5.6***	Estuaires et littoral picards (baies de Somme et d'Authie) SAC / SCI (FR) FR2200346	Grey seal, harbour seal	114.6	148.0	139.1
Figure 5.3 ***Figure 5.5*** ***Figure 5.6***	Baie de Seine occidentale SAC (FR) FR2502020	Harbour porpoise, grey seal, harbour seal	114.9	122.0	138.1
Figure 5.4 ***Figure 5.5*** ***Figure 5.6***	Falaises du Cran aux Oeufs et du Cap Gris-Nez, Dunes du Chatelet, Marais de Tardinghen et Dunes de Wissan SAC/ SCI (FR) FR3100478	Bottlenose dolphin, grey seal, harbour seal	115.0	148.6	126.3

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
Figure 5.5	Marais du Cotentin et du Bessin - Baie des Veys SAC / SCI (FR) FR2500088	Grey seal	124.3	131.2	146.9
Figure 5.4	Récifs et landes de la Hague SAC/SCI (FR) FR2500084	Bottlenose dolphin, grey seal	125.6	132.1	145.8
Figure 5.5	Estuaire de la Seine SAC / SCI (FR) FR2300121	Grey seal	125.9	140.8	155.8
Figure 5.3 ***Figure 5.4*** ***Figure 5.5*** ***Figure 5.6***	Baie de Seine orientale SAC (FR) FR2502021	Harbour porpoise, bottlenose dolphin, grey seal	126.1	134.9	150.5
Figure 5.3	Southern North Sea SAC (UK) UK0030395	Harbour porpoise	127.7	158.3	132.1
Figure 5.4 ***Figure 5.5***	Anse de Vauville (FR) SAC/SCI (FR) FR2502019	Bottlenose dolphin, grey seal	135.7	142.2	156.1
Figure 5.3 ***Figure 5.5***	Bancs de Flandres SAC/SCI (FR) FR3102002	Harbour porpoise, grey seal	135.7	166.5	140.4
Figure 5.3	Récifs et marais arrière-littoraux du Cap Lévi à la Pointe de Saire SAC / SCI (FR) FR2500090	Harbour porpoise	137.9	144.9	160.8

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
Figure 5.4	Banc et récifs de Surtainville (FR) FR2502018	Bottlenose dolphin	150.1	156.7	171.2
Figure 5.3	Vlaamse Banken SAC (BE) BEMNZ0001	Harbour porpoise	182.8	211.6	182.8
Figure 5.3	SBZ 1 / ZPS 1 (BE) BEMNZ0002	Harbour porpoise	188.0	219.6	192.9
Figure 5.4	Chausey SAC (FR) FR2500079	Bottlenose dolphin	188.4	195.3	211.0
Figure 5.4	Nord Bretagne DH SAC/SCI (FR) FR2502022	Bottlenose dolphin	194.8	200.5	210.5
Figure 5.3	SBZ 2 / ZPS 2 (BE) BEMNZ0003	Harbour porpoise	206.2	236.9	210.1
Figure 5.4	Cap d'Erquy-Cap Fréhel (FR) FR5300011	Bottlenose dolphin	220.4	227.0	242.0
Figure 5.4	Côte de Cancale à Paramé (FR) SAC FR5300052	Bottlenose dolphin	224.2	231.2	246.8
Figure 5.3	SBZ 3 / ZPS 3 (BE) BEMNZ0004	Harbour porpoise	230.9	260.9	233.5
Figure 5.4	Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard (FR) FR5300012	Bottlenose dolphin	235.7	242.5	257.9

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
Figure 5.3	Vlakte van de Raan SAC (BE) BEMNZ0005	Harbour porpoise	241.1	270.4	242.6
Figure 5.4	Côte de Granit rose-Sept-Iles SAC (FR) FR5300009	Bottlenose dolphin	257.8	264.0	276.3
Figure 5.4	Abers - Côtes des légendes (FR) SAC/SCI FR5300017	Bottlenose dolphin	345.0	351.1	362.5
Figure 5.4	Ouessant-Molène SAC/ SCI (FR) FR5300018	Bottlenose dolphin	376.1	382.1	393.5
Figure 5.3	Noordzeekustzone SAC (NL) NL9802001	Harbour porpoise	385.3	406.6	376.0
Figure 5.3	Klaverbank SAC (NL) NL2008002	Harbour porpoise	407.6	413.1	383.1
Figure xx	Chaussée de Sein SAC (FR) FR5302007	Bottlenose dolphin	408.6	414.8	427.2
Figure xx	Mers Celtiques - Talus du golfe de Gascogne SAC (FR) FR5302015	Bottlenose dolphin		416.9	427.3
Figure 5.3	Doggerbank SCI (UK) UK0030352	Harbour porpoise	426.9	426.0	397.6
Figure 5.3	Doggersbank SAC (NL) NL2008001	Harbour porpoise	454.9	457.3	428.0

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
Figure 5.3	Borkum-Riffgrund SCI (DE) DE2104301	Harbour porpoise	554.0	572.7	541.8
Figure 5.3	Nationalpark Niedersachsisches Wattenmeer SAC (DE) DE2306301	Harbour porpoise	560.1	579.9	549.1
Figure 5.3	Sylter Aussenriff SCI (DE) DE1209301	Harbour porpoise	641.8	654.0	623.1
Figure 5.3	Helgoland mit Helgoländer Felssockel SAC (DE) DE1813391	Harbour porpoise	661.9	681.1	650.2
Figure 5.3	Steingrund SAC (DE) DE1714391	Harbour porpoise	671.6	691.0	660.2
Figure 5.3	Hamburgisches Wattenmeer SAC (DE) DE2016301	Harbour porpoise	673.7	694.6	663.8
Figure 5.3	NTP S-H Wattenmeer und angrenzende Kustengebiete SAC (DE) DE0916491	Harbour porpoise	677.7	698.5	667.8
Figure 5.3	Kosterfjorden-Väderöfjorden SAC (DE) SE0520170	Harbour porpoise	1131.3	1139.8	1109.4
Special Protection Areas / Ramsar					

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
Figure 5.2	Pagham Harbour (UK) SPA and Ramsar	Dark-bellied Brent geese (W) Ruff (W) Little tern (B) Common tern (B)	13.5 Common tern	9.2 Common tern	9.2
Figure 5.2	Arun Valley (UK) SPA and Ramsar	Bewick's swan (W) Waterbird assemblage	26.8	12.2	2.8
Figure 5.2	Solent and Dorset Coast (UK) pSPA	Common tern Little tern Sandwich tern	13.00 Common tern Sandwich tern	0.63 Common tern Sandwich tern Little tern	0.63 Common tern Little tern Sandwich tern
Figure 5.2	Chichester and Langstone Harbours (UK) SPA	Common tern Little tern Sandwich tern	22.3 Sandwich tern	15.7 Common tern Sandwich tern	15.7 N/A
Figure 5.2	Chichester and Langstone Harbours (UK) Ramsar	Common tern Little tern Sandwich tern	22.3 Sandwich tern	15.7 Common tern Sandwich tern	15.7 N/A
Figure 5.2	Solent and Southampton Water (UK) SPA	Common tern Little tern	28.4 Sandwich tern	31.3 Sandwich tern	35.2 N/A

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
		Med gull Sandwich tern Roseate tern			
Figure 5.2	Solent and Southampton Water (UK) Ramsar	Common tern Little tern Med gull Sandwich tern Roseate tern	28.4 Sandwich tern	31.3 Sandwich tern	35.2 N/A
Figure 5.2	Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a moroedd Benfro (UK) SPA	Manx shearwater European storm petrel Puffin Lesser black-backed gull	311.6 Manx shearwater European storm petrel	310.8 Manx shearwater European storm petrel	N/A
Figure 5.2	Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island (UK) SPA UK9013121	Manx shearwater	360.1 Manx shearwater	352.5 Manx shearwater	N/A
Figure 5.2	Alderney West Coast and the Burhou Islands (UK) Ramsar	Gannet European storm petrel Puffin Lesser black-backed gull Great black-backed gull	148.1 (approx.) Gannet Kittiwake Fulmar European storm petrel	154.3 (approx.) Gannet Kittiwake Fulmar European storm petrel	N/A

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
		Kittiwake Fulmar Guillemot Razorbill Puffin Herring gull Shag Cormorant			
Figure 5.2	Flamborough and Filey Coast (UK) SPA UK9006101	Kittiwake Gannet Fulmar Guillemot Razorbill Puffin Herring gull Shag Cormorant	376.4 Fulmar Gannet	366.5 Fulmar Gannet	N/A
Figure 5.2	Isles of Scilly (UK) Ramsar UK11033	Manx shearwater Fulmar European storm petrel Lesser black-backed gull Great black-backed gull	403.3 Manx shearwater Fulmar	407.4 Manx shearwater Fulmar	N/A

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
		Herring gull Kittiwake Razorbill Shag			
Figure 5.2	Copeland Islands (UK) SPA	Manx shearwater Arctic tern	556.1 Manx shearwater	544.5 Manx shearwater	N/A
Figure 5.2	Rum (UK) SPA UK9001341	Manx shearwater Kittiwake Guillemot	786.3 Manx shearwater	772.8 Manx shearwater	N/A
Figure 5.2	St Kilda (UK) SPA UK9001031	Manx shearwater Fulmar European storm petrel Leach's storm petrel Gannet Kittiwake Guillemot Razorbill Puffin	939.7 Manx shearwater	926.8 Manx shearwater	N/A
Figure 5.2	Blasket Island (IE) SPA IE0004008	Fulmar Manx shearwater European storm petrel Shag	703.5 Manx shearwater	703.5 Manx shearwater	N/A

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
		Lesser black-backed gull Herring gull Kittiwake Arctic tern Razorbill Puffin			
Figure 5.2	Cruagh Island (IE) SPA IE0004170	Manx shearwater	727.9 Manx shearwater	723.7 Manx shearwater	N/A
Figure 5.2	Deenish Island and Scariff Island (IE) SPA IE0004175	Manx shearwater Fulmar European storm petrel Lesser black-backed gull Arctic tern	677.8 Manx shearwater	678.9 Manx shearwater	N/A
Figure 5.2	Puffin Island (IE) SPA IE0004003	Fulmar Manx shearwater European storm petrel Lesser black-backed gull Razorbill Puffin	692.0 Manx shearwater	692.8 Manx shearwater	N/A

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
Figure 5.2	Skelligs (IE) SPA IE0004007	Fulmar Manx shearwater Gannet Kittiwake Guillemot Puffin	698.5 Manx shearwater	699.4 Manx shearwater	N/A
Figure 5.2	Littoral seino-marin (FR) SPA FR2310045	Fulmar Kittiwake Lesser black-backed gull Herring gull Great black-backed gull Shag Cormorant	72.2 Fulmar Kittiwake Lesser black-backed gull Great black-backed gull	95.0 Fulmar Kittiwake Lesser black-backed gull	N/A
Figure 5.2	Falaise du Bessin Occidental (FR) SPA FR2510099	Fulmar Herring gull Lesser black-backed gull Kittiwake	132.6 Fulmar Kittiwake	139.7 Fulmar Kittiwake	N/A
Figure 5.2	Chausey (FR) SPA FR2510037	Gannet Razorbill Herring gull	188.4 Gannet	195.3 Gannet	N/A

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
		Lesser black-backed gull Great black-backed gull Shag Cormorant Common tern			
Figure 5.2	Cap d'Erquy-Cap Fréhel (FR) SPA FR5310095	Kittiwake Fulmar Guillemot Razorbill Lesser black-backed gull Herring gull Great black-backed gull Shag	228.6 Fulmar Gannet	235.3 Fulmar Gannet	N/A
Figure 5.2	Tregor Goëlo (FR) SPA FR5310070	Fulmar Sandwich tern Common tern Lesser black-backed gull Herring gull	244.4 Fulmar	250.9 Fulmar	N/A

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
		Great black-backed gull Shag Little tern			
Figure 5.2	Côte de Granit Rose-Sept Iles (FR) SPA FR5310011	Manx shearwater Fulmar European storm petrel Gannet Lesser black-backed gull Herring gull Great black-backed gull Shag Kittiwake Puffin Guillemot Razorbill Sandwich tern Common tern Little tern Roseate tern	257.8 Manx shearwater Fulmar Gannet European storm petrel	264.0 Manx shearwater Fulmar Gannet European storm petrel	N/A
Figure 5.2	Ouessant-Molène (FR) SPA FR5310072	Manx shearwater Fulmar	376.1	382.1	N/A

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
		European storm petrel Lesser black-backed gull Herring gull Great black-backed gull Shag Cormorant Kittiwake Puffin Guillemot Sandwich tern Common tern Little tern Roseate tern	Manx shearwater Fulmar	Manx shearwater Fulmar	
Figure 5.2	Camaret (FR) SPA FR5312004	Fulmar European storm petrel Lesser black-backed gull Herring gull Great black-backed gull Kittiwake Shag	385.3 Fulmar	391.5 Fulmar	N/A

Figure reference	Designated site name	Relevant feature(s)[13]	Distance to project component (as the crow flies) with spatial overlap (km)		
			Array	Offshore CC	Onshore CC
Figure 5.2	Iles Houat-Hoëdic (FR) SPA FR5312011	Manx shearwater European storm petrel Lesser black-backed gull Herring gull Great black-backed gull Shag	390.2 Manx shearwater	397.0 Manx shearwater	N/A
Figure 5.2	Cap Sizun (FR) SPA FR5310055	Manx shearwater Fulmar European storm petrel Lesser black-backed gull Herring gull Great black-backed gull Shag Kittiwake Razorbill Guillemot	397.9 Manx shearwater Fulmar	404.2 Manx shearwater Fulmar	N/A

* Only European site features to which an effect-pathway has been identified are listed in this table

-200000 0 200000 400000 600000 800000 1000000

6400000 6200000 6000000 5800000 5600000 5400000

N

St Kilda (UK) SPA

Rum (UK) SPA

Copeland Islands (UK) SPA

Flamborough and Filey Coast (UK) SPA

Cruagh Island SPA (IE) SPA

Blasket Islands SPA (IE) SPA

Skelligs SPA (IE) SPA

Deenish Island and Scariff Island SPA (IE) SPA

Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island (UK) SPA

Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro (UK) SPA

Pagham Harbour (UK) SPA & Ramsar

Arun Valley (UK) SPA and Ramsar

Chichester and Langstone Harbours (UK) SPA & Ramsar

Solent and Dorset Coast (UK) SPA

Solent and Southampton Water (UK) SPA & Ramsar

Littoral seino-marin (FR) SPA

Isles of Scilly (UK) SPA

Alderney West Coast & Burhou Islands Ramsar

Falaise du Bessin Occidental (FR) SPA

Côte de Granit Rose-Sept Iles (FR) SPA

Tregor Goëlo (FR) SPA

Chausey (FR) SPA

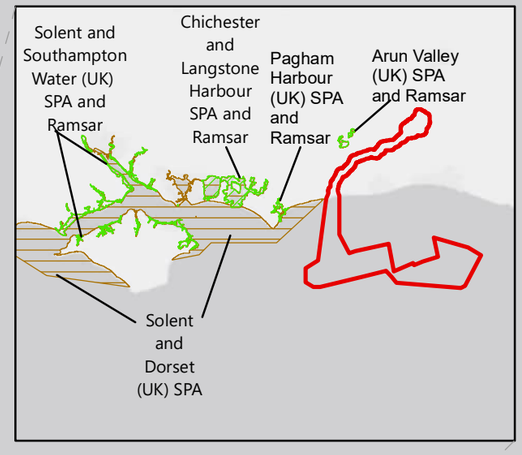
Ouessant-Molène (FR) SPA

Camaret (FR) SPA

Cap d'Erquy-Cap Fréhel (FR) SPA

Cap Sizun (FR) SPA

Iles Houat-Hoëdic (FR) SPA



Key

- Scoping Boundary
- Ramsar sites
- Special Protecteed Areas (SPAs)

Kilometres
0 385 770 1,540 2,310 3,080

1:70,000,000

WGS 1984 UTM Zone 30N Transverse Mercator

Rampion Extension Development

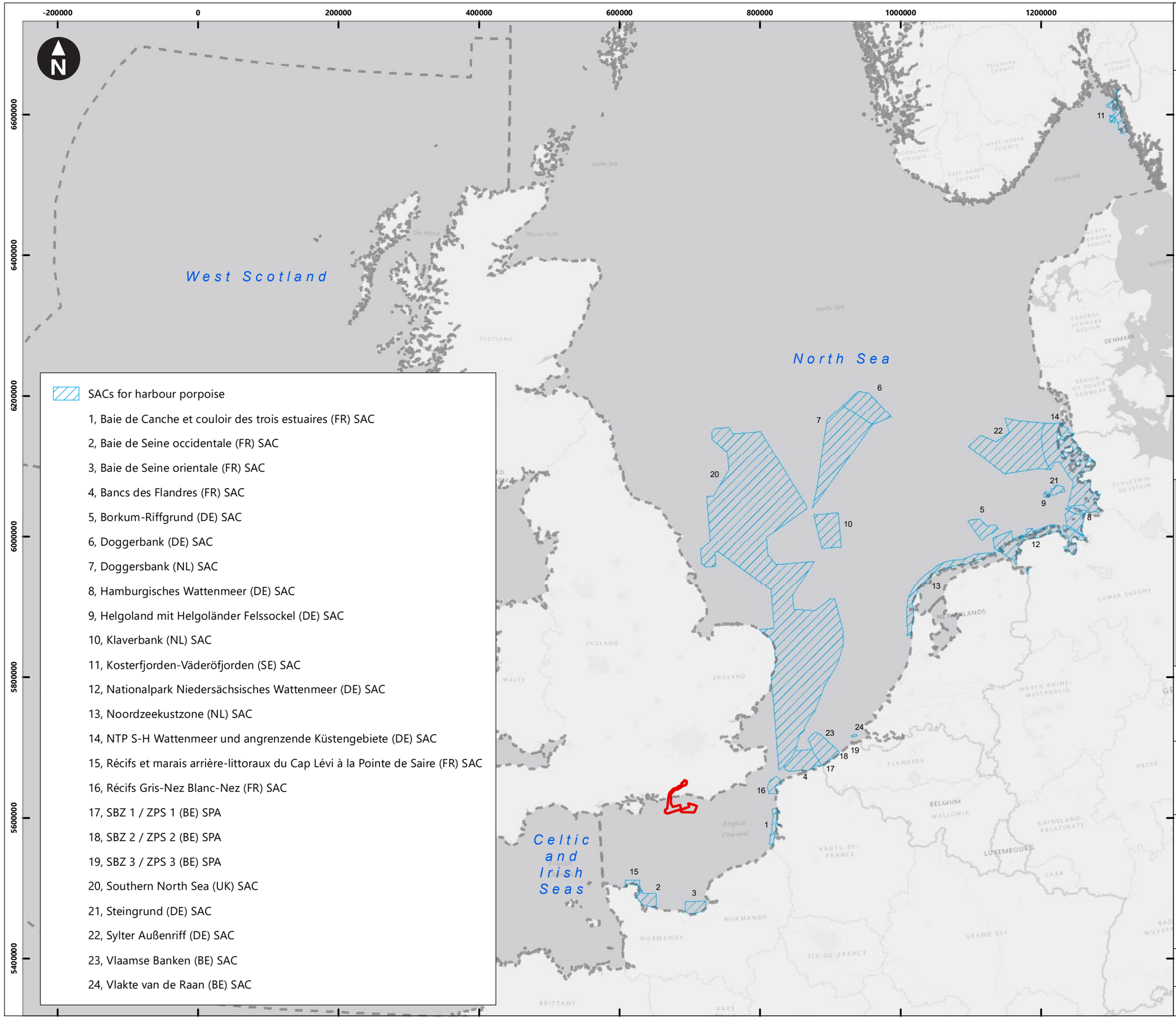
RWE

Rampion 2 Offshore Wind Farm

Figure 5.2 SPAs and Ramsars identified for Screening under Criteria 2 which may interact with the relevant area of search

HRA Screening Report

System Identifier:				Version:
42285-GOBE-PE-CC-FG-O8-7265				1.0
Company: GOBE	Drawn By: CC	Chk/Aprvd: WOOD	Drawn Date: 03-Sep-20	Status: FINAL



Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community; © European Commission

Key

- Scoping Boundary
- Harbour porpoise species management unit boundary (IAMMWG, 2015)

Kilometres
0 25 50 100 150 200

1:5,200,000

WGS 1984 UTM Zone 30N Transverse Mercator

Rampion Extension Development

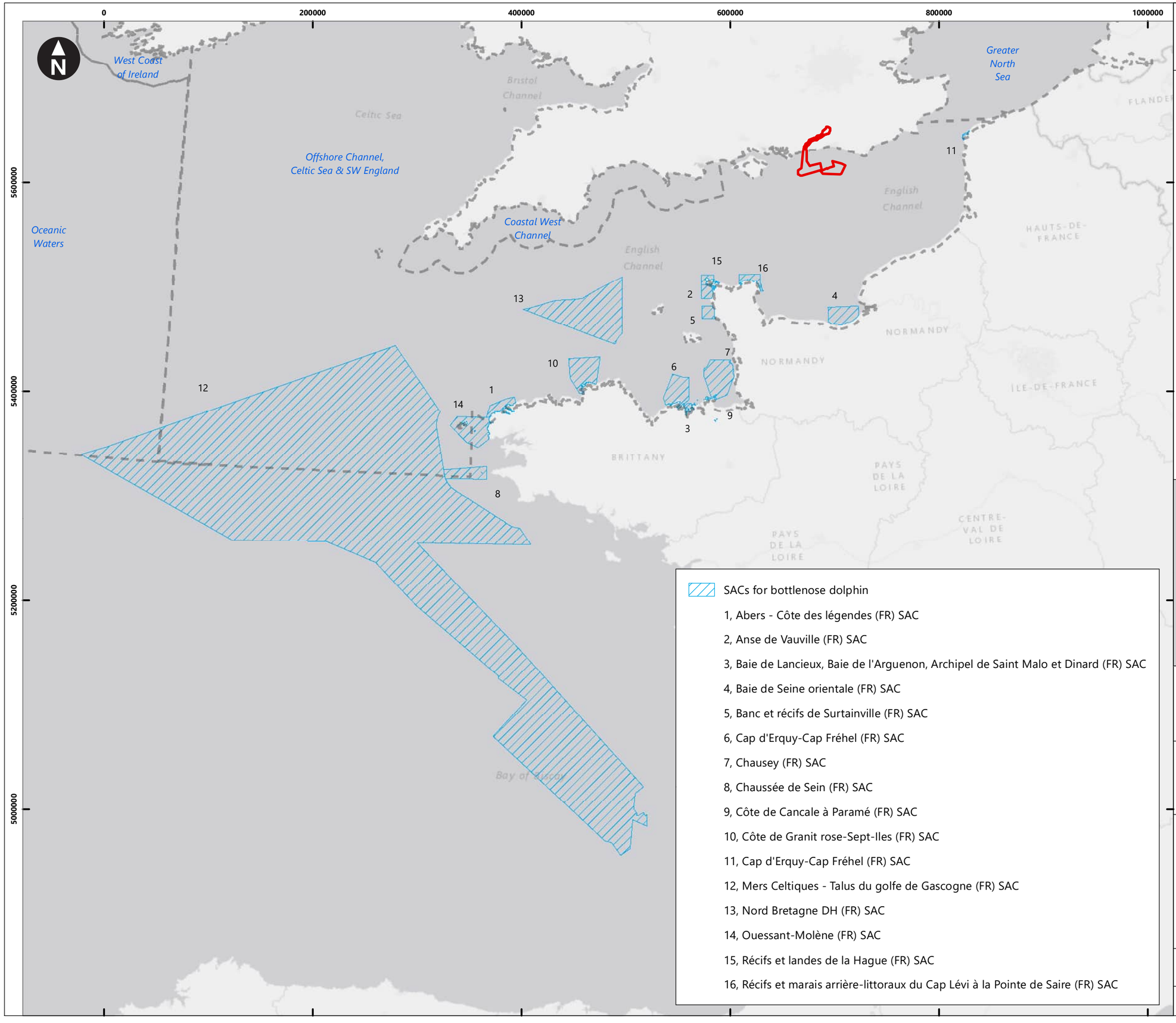
RWE

Rampion 2 Offshore Wind Farm

Figure 5.3 SACs for harbour porpoise within the North Sea Management Unit

HRA Screening Report

System Identifier:				Version:
42285-GOBE-PE-CC-FG-O8-8478				1.0
Company: GOBE	Drawn By: CC	Chk/Aprvd: WOOD	Drawn Date: 03-Sep-20	Status: FINAL



SACs for bottlenose dolphin

1, Abers - Côte des légendes (FR) SAC

2, Anse de Vauville (FR) SAC

3, Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard (FR) SAC

4, Baie de Seine orientale (FR) SAC

5, Banc et récifs de Surtainville (FR) SAC

6, Cap d'Erquy-Cap Fréhel (FR) SAC

7, Chausey (FR) SAC

8, Chaussée de Sein (FR) SAC

9, Côte de Cancale à Paramé (FR) SAC

10, Côte de Granit rose-Sept-Iles (FR) SAC

11, Cap d'Erquy-Cap Fréhel (FR) SAC

12, Mers Celtiques - Talus du golfe de Gascogne (FR) SAC

13, Nord Bretagne DH (FR) SAC

14, Ouessant-Molène (FR) SAC

15, Récifs et landes de la Hague (FR) SAC

16, Récifs et marais arrière-littoraux du Cap Lévi à la Pointe de Saire (FR) SAC

Key

Scoping Boundary

Bottlenose dolphin species management unit boundary (IAMMWG, 2015)

Kilometres

0 15 30 60 90 120

1:3,500,000

WGS 1984 UTM Zone 30N Transverse Mercator

Rampion Extension Development

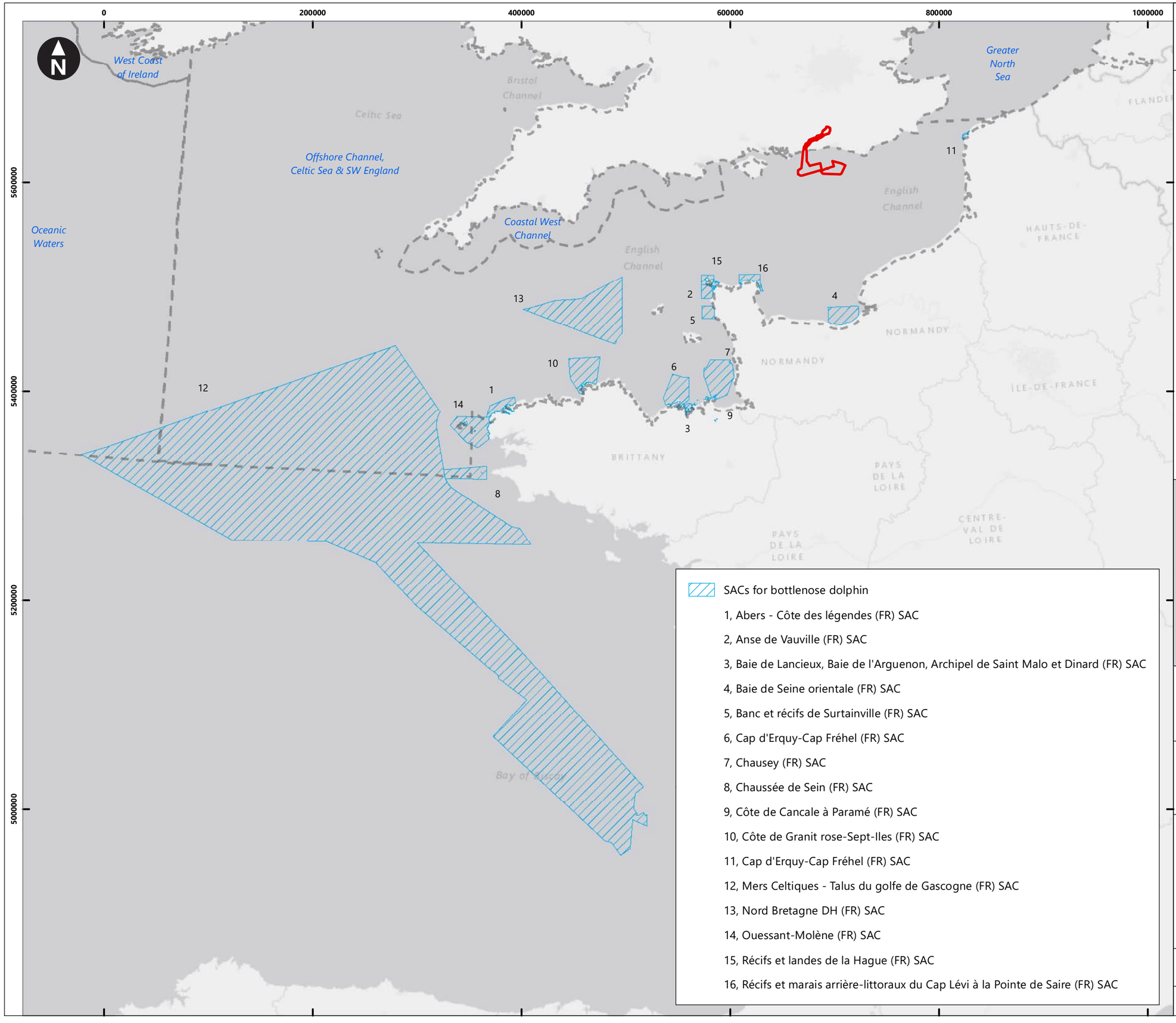
RWE

Rampion 2 Offshore Wind Farm

Figure 5.4 SACs for bottlenose dolphin within the Offshore Channel, Celtic Sea and South West England Species Management Unit (OCSW MU)

HRA Screening Report

System Identifier:				Version:
42285-GOBE-PE-CC-FG-O8-5114				1.0
Company: GOBE	Drawn By: CC	Chk/Aprvd: WOOD	Drawn Date: 03-Sep-20	Status: FINAL



SACs for bottlenose dolphin

1, Abers - Côte des légendes (FR) SAC

2, Anse de Vauville (FR) SAC

3, Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard (FR) SAC

4, Baie de Seine orientale (FR) SAC

5, Banc et récifs de Surtainville (FR) SAC

6, Cap d'Erquy-Cap Fréhel (FR) SAC

7, Chausey (FR) SAC

8, Chaussée de Sein (FR) SAC

9, Côte de Cancale à Paramé (FR) SAC

10, Côte de Granit rose-Sept-Iles (FR) SAC

11, Cap d'Erquy-Cap Fréhel (FR) SAC

12, Mers Celtiques - Talus du golfe de Gascogne (FR) SAC

13, Nord Bretagne DH (FR) SAC

14, Ouessant-Molène (FR) SAC

15, Récifs et landes de la Hague (FR) SAC

16, Récifs et marais arrière-littoraux du Cap Lévi à la Pointe de Saire (FR) SAC

Key

Scoping Boundary

Bottlenose dolphin species management unit boundary (IAMMWG, 2015)

Kilometres

0 15 30 60 90 120

1:3,500,000

WGS 1984 UTM Zone 30N Transverse Mercator

Rampion Extension Development

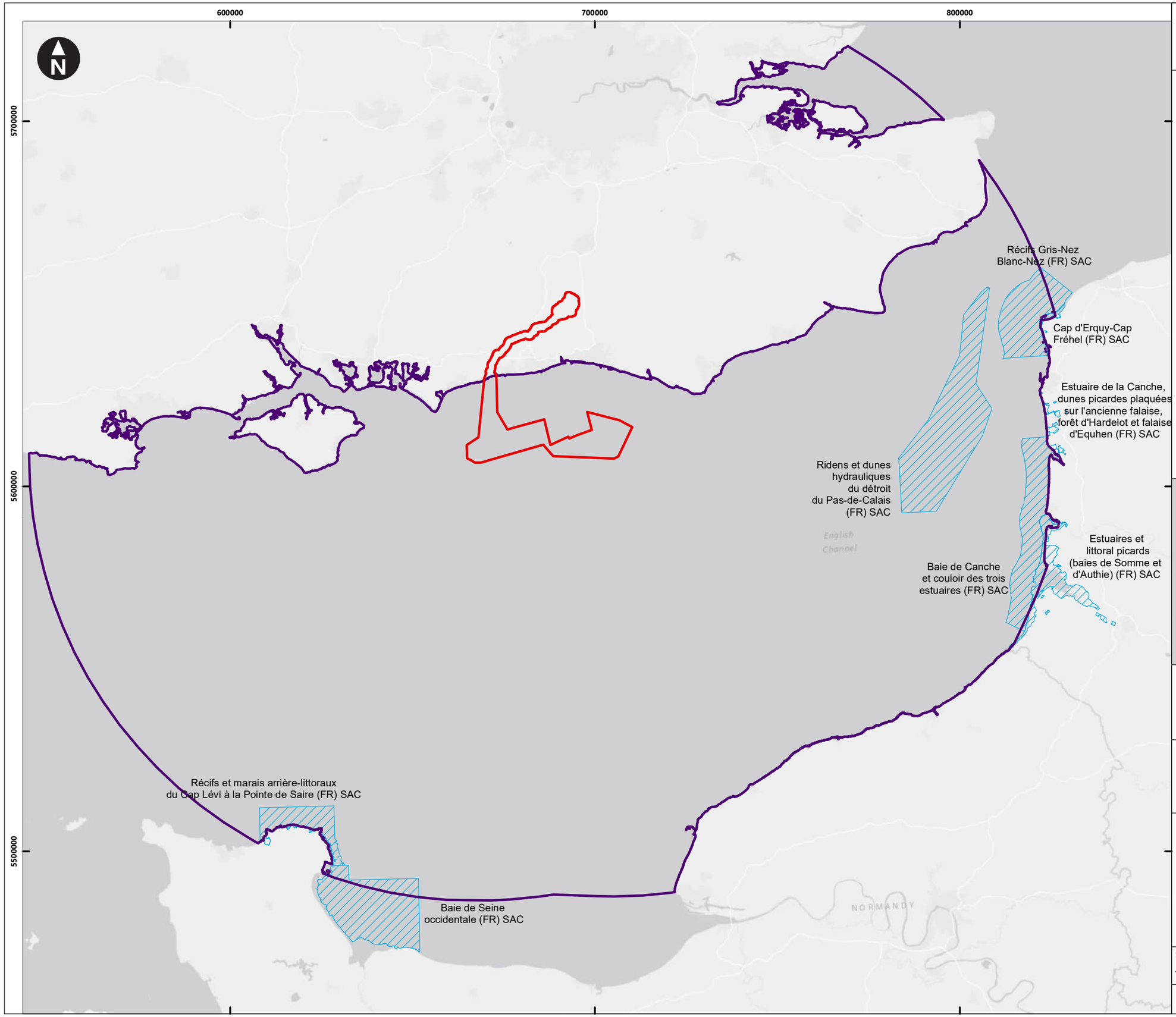
RWE

Rampion 2 Offshore Wind Farm

Figure 5.4 SACs for bottlenose dolphin within the Offshore Channel, Celtic Sea and South West England Species Management Unit (OCSW MU)

HRA Screening Report

System Identifier:				Version:
42285-GOBE-PE-CC-FG-O8-5114				1.0
Company: GOBE	Drawn By: CC	Chk/Aprvd: WOOD	Drawn Date: 03-Sep-20	Status: FINAL



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Key

- Scoping Boundary
- Offshore Scoping Boundary 120km buffer
- SACs for harbour seal

Kilometres
0 5 10 20 30 40

1:1,000,000

WGS 1984 UTM Zone 30N Transverse Mercator

Rampion Extension Development

RWE

Rampion 2 Offshore Wind Farm

Figure 5.6 SACs for harbour seal within 120km or to which wider connectivity was determined

HRA Screening Report

System Identifier:	Version:
42285-GOBE-PE-CC-FG-O8-9493	1.0

Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
GOBE	CC	WOOD	03-Sep-20	FINAL

600000

700000

800000

5700000

5600000

5500000

River Itchen (UK) SAC

Estuaires et
littoral picards
(baies de Somme et
d'Authie) (FR) SAC

English
Channel

NORMANDY

Key

- Scoping Boundary
- Offshore Scoping Boundary 100km buffer
- SACs for migratory fish

Kilometres
0 5 10 20 30 40

1:1,000,000

WGS 1984 UTM Zone 30N Transverse Mercator

Rampion Extension Development

RWE

Rampion 2 Offshore Wind Farm

Figure 5.7 SACs for migratory fish within 100km

HRA Screening Report

System Identifier:	Version:
42285-GOBE-PE-CC-FG-O8-9708-2	1.0

Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
GOBE	CC	WOOD	03/09/2020	FINAL

500000

510000

520000

120000

110000

100000

N

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Key

Scoping Boundary

Special Area of Conservation (SAC)

English Channel

Kilometres

0 0.5 1 2 3 4

1:100,000

British National Grid Transverse Mercator

Rampion Extension Development

RWE

Rampion 2 Offshore Wind Farm

Figure 5.8 SACS identified for mobile terrestrial features (e.g. bat) under criterion 2

HRA Screening Report

System Identifier:				Version:
42285-WOOD-PE-CC-FG-O8-3389				1.0
Company: WOOD	Drawn By: BARNB	Chk/Aprvd: WOOD	Drawn Date: 03/09/2020	Status: Final

5.4 Criteria 3

5.4.1 Criteria 3 is used to identify European site features, or supporting habitat present within range of near-field project related effects. Potential effects on receptor groups are detailed in **section 6.** The Screening ranges proposed for each receptor group (and applied in Screening to identify connectivity to European sites) are provided in **Table 5.4.**

5.4.2 The European sites identified under this Criteria are summarised in Table 5.5 and presented in Figure 5.9.

Table 5.4 Near-field effect-ranges applied to the European site selection process (by receptor group).

Receptor	Nature of effect	Maximum possible range of that effect	Discussion
Offshore / inter-tidal receptor groups			
Subtidal and intertidal benthic ecology	Increased suspended sediment and deposition	32km	The study area established for the Scoping study of the project is based, with reference to modelling completed for Rampion 1, on the largest distance over which increased sediment and deposition is likely to occur. This distance is 15km and 10km around the Array and offshore cable corridor boundaries, respectively. For the HRA, a 32km buffer is proposed to account for uncertainties inherent at this stage of the HRA and provide a highly precautionary Screening range.
Cetaceans, pinnipeds, migratory fish and breeding seabirds	NA	See Table 5.2	Due to the high-mobility of these features, direct-effect ranges are not applicable to the process of selecting sites for Screening. Instead, parameters that define potential spatial connectivity Table 5.2 have been applied.
Intertidal and offshore ornithology	Disturbance displacement	500m (onshore works) 4km (offshore works)	Joint Statutory Nature Conservation Body Interim Displacement Advice Note. (SNCB, 2017)
Onshore ecological receptor groups			

Receptor	Nature of effect	Maximum possible range of that effect	Discussion
Terrestrial and freshwater habitats and associated species	Changes in hydrology	1km	1km is applied with respect to for Ground Water Dependent Terrestrial Ecosystems (GWDTE) as a precaution. This ZoI will be reviewed following detailed assessment of hydrological impacts at later stages of the application.
	Pollution events	500m	500m – this ZoI is based on the greatest distance quoted in guidance around pollutant control including dust and hydrocarbons (including Institute of Air Quality Management, 2014 and the Environment Agency's Pollution Prevention Guidance 5).
	Emissions	200m from the roadside of routes (including public highway) on which construction, operational of decommissioning traffic may travel.	Based on Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (2018)
	Increased light levels	450m	HSE guidance (1997) for minimum lighting requirements for construction work which would extend 20m, with an average of 50 m. Headlights from vehicles associated with construction and those of commuting workforce have potential to reach 450 m (Pocock and Lawrence, 2005).
	Increased noise and vibration	500m	Based on upper limit of potential low-level noise effects from the Waterbird Mitigation Toolkit (Cutts, Hemingway and Spencer, 2013)
	Introduction of invasive non-native species	Within the onshore component of the Scoping Boundary	Construction vehicles and staff movements would only introduce or spread invasive non-native species to areas within work areas (i.e. inside the Scoping Boundary)

Table 5.5 European sites with an interest feature within potential range of an effect (✓yes × no) B = Breeding W = Wintering

Designated site name	Relevant feature(s)*	Within relevant range (km) of:		
		Array	Offshore cable corridor	Onshore cable corridor
SACs / SCIs potentially located within range of a project-related effect				
Arun Valley SAC	Lesser whirlpool ram's-horn snail	NA	NA	✓ 2.8
Arun Valley SPA and Ramsar site	Bewick's swan (W) Waterbird assemblage (W)	NA	NA	✓ 2.8
Pagham Harbour SPA and Ramsar site	Dark-bellied brent goose (W)	NA	NA	✓ 9.2
Duncton to Bignor Escarpment (UK) SAC	Asperulo-Fagetum beech forests	NA	NA	✓ 6.5
The Mens SAC	Atlantic acidophilus beech forests Barbastelle bat	NA	NA	✓ 11.0
Solent Maritime SAC (UK) UK0030059	Estuaries Spartina swards Atlantic salt meadows Sandbanks which are slightly covered by sea water all the time Mudflats and sandflats not covered by seawater at low tide Coastal lagoons Salicornia and other annuals colonizing mud and sand	✓ 22.0	✓ 15.6	NA
South Wight Maritime SAC (UK) UK0030061	Reefs Submerged or partially submerged sea caves	✓ 20.4	✓ 23.3	NA
Solent and Isle of Wight lagoons SAC (UK) UK0017073	Coastal lagoons * Priority feature	✓ 30.6	✓ 31.1	NA
SPA/Ramsar sites with supporting (intertidal) habitat within potential range of a project-related effect				

Designated site name	Relevant feature(s)*	Within relevant range (km) of:		
		Array	Offshore cable corridor	Onshore cable corridor
Pagham Harbour Ramsar (UK) UK11052	Dark-bellied Brent geese	✓ 13.5	✓ 9.2	× 9.2
Pagham Harbour (UK) SPA UK9012041	Common tern (B) Little tern (B) Ruff (B) Dark-bellied Brent goose (W)	✓ 13.5	✓ 9.2	× 9.2
Chichester and Langstone Harbours Ramsar (UK) UK11013	Intertidal habitats supporting designated features	✓ 22.3	✓ 15.7	× 15.7
Chichester and Langstone Harbours SPA (UK) UK9011011	Intertidal habitats supporting designated features	✓ 22.3	✓ 15.7	× 15.7
Solent and Southampton Water SPA (UK) UK9011061	Intertidal habitats supporting designated features	✓ 28.3	✓ 31.2	NA
Solent and Southampton Water Ramsar (UK) UK11063	Intertidal habitats supporting designated features	✓ 28.3	✓ 31.2	NA

* Only European site features to which an effect-pathway has been identified are listed in this table

600000

650000

700000

5650000

5600000

5550000

N

The Mens (UK) SAC

Duncton to Bignor Escarpment (UK) SAC

Arun Valley (UK) SPA, SAC and Ramsar

Chichester and Langstone Harbours (UK) SPA & Ramsar

Pagham Harbour (UK) SPA and Ramsar

Solent and Southampton Water (UK) SPA & Ramsar

Solent and Isle of Wight Lagoons (UK) SAC and Ramsar

Solent and Dorset Coast (UK) SPA

South Wight Maritime (UK) SAC

Key

- Scoping Boundary
- Ramsar sites
- Special Areas of Conservation (SACs)
- Special Protection Areas (SPAs)
- Offshore Scoping Boundary 32km buffer

Kilometres

0 3.5 7 14 21 28

1:625,000

WGS 1984 UTM Zone 30N Transverse Mercator

Rampion Extension Development

RWE

Rampion 2 Offshore Wind Farm

Figure 5.9 European Sites identified for Screening under Criteria 3 which may interact with the relevant area of search

HRA Screening Report

System Identifier:	Version:
42285-GOBE-PE-CC-FG-O8-6949	1.0

Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
GOBE	CC	WOOD	03-Sep-20	FINAL

5.5 Criteria 4

5.5.1 Criteria 4 is applied to identify European sites for species which have been identified as likely to be within the study area (defined in **Section 4.4**). In relation to ornithological receptors, Criteria 4 aims to identify designated bird species which may be impacted during the non-breeding season. Those bird species which have been recorded during surveys might be breeding interest features at SPA sites to the north of the project, and either pass through the area during migration or reside in the area over winter.

5.5.2 For migratory species, including those that migrate at night and those that migrate in very short time windows, the information on the analyses and Screening processes that have been applied recently to other OWFs proposed in the North Sea and the English Channel can be used to inform the Screening of Rampion 2. Quantitative assessments have been carried out for Hornsea Project One OWF, East Anglia ONE OWF, East Anglia THREE OWF and Navitus Bay OWF using a migratory pathway modelling process and Collision Risk Modelling (CRM) to predict the numbers of migratory seabirds, waterfowl and shorebirds that might be at risk of collision mortality.

5.5.3 Quantitative assessments have been carried out for the Scottish east coast and Rampion OWF using a simpler migratory pathway process and CRM to predict the numbers of migratory seabirds, waterfowl and shorebirds that might be at risk of collision mortality. In all cases, the predicted mortality has been well below a level that when applied in a HRA Screening process has led to a LSE being identified and therefore, all sites for which the migratory birds are interest features have not been taken further in the HRA process. This is on the basis the sites have been effectively Screened previously through a quantitative migratory pathway analysis and LSE can be discounted for such interest features and associated sites on the basis of a minimal number of birds at risk

5.5.4 An initial precautionary review process has been undertaken to identify all SPAs and Ramsars to the north of Rampion 2 and on the eastern seaboard of the British Isles, which may be the origin of seabirds during migration which may pass through or reside at the Scoping Boundary. The species considered by this process are those recorded during the first year of site-specific digital aerial survey at Rampion 2 **(Table 4.1). Table 5.6** below provides the results of this process.

5.5.5 Recent satellite tagging of gannet has provided evidence of a potential clockwise loop migration by the species (Furness *et al.,* 2018). Therefore, birds from the west coast of the UK may pass through the Rampion 2 site following the breeding season. As a result, **Table 5.6** includes all UK gannet SPAs and Ramsars.

Table 5.6 European sites for interest features that might pass through the Array and or Offshore cable corridor on migration, or during winter.

Species	European site name
Red-throated diver	Caithness and Sutherland Peatlands (UK) SPA & Ramsar, Foula (UK) SPA, Hermaness, Saxa Vord and Valla Field (UK) SPA, Hoy

Species	European site name
	(UK) SPA, Orkney Mainland Moors (UK) SPA, Otterswick and Graveland (UK) SPA, Ronas Hill – North Roe and Tingon (UK) SPA and Ramsar
Fulmar	Buchan Ness to Collieston Coast (UK) SPA, Calf of Eday (UK) SPA, Copinsay (UK) SPA, East Caithness Cliffs (UK) SPA, Fair Isle (UK) SPA, Fetlar (UK) SPA, Foula (UK) SPA, Fowlsheugh (UK) SPA, Hermaness, Saxa Vord and Valla Field (UK) SPA, Hoy (UK) SPA, North Caithness Cliffs (UK) SPA, Noss (UK) SPA, Rousay (UK) SPA, Sumburgh Head (UK) SPA, Troup, Pennan and Lion's Head (UK) SPA, West Westray (UK) SPA, Flamborough and FIley Coast (UK) SPA
Gannet	Fair Isle (UK) SPA, Flamborough and Filey Coast (UK) SPA, Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA, Hermaness, Saxa Vord and Valla Field (UK) SPA, Noss (UK) SPA, Sule Skerry and Sule Stack (UK) SPA, Ailsa Craig (UK) SPA, Grassholm (UK) SPA, North Rona and Sula Sgeir (UK) SPA, Alderney West Coast and the Burhou Islands Ramsar
European storm petrel	Auskerry (UK) SPA, Mousa (UK) SPA, Sule Skerry and Sule Stack (UK) SPA,
Leaches storm petrel	Sule Skerry and Sule Stack (UK) SPA, Foula (UK) SPA, Ramna Stacks and Gruney (UK) SPA
Herring gull	Buchan Ness to Collieston Coast (UK) SPA, East Caithness Cliffs (UK) SPA, Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA, Fowlsheugh (UK) SPA, St Abb's Head to Fast Castle (UK) SPA, Troup, Pennan and Lion's Heads (UK) SPA, Flamborough and Filey Coast (UK) SPA
Lesser black-backed gull	Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA, Alde-Ore Estuary (UK) SPA and Ramsar
Great black-backed gull	East Caithness Cliffs (UK) SPA, Hoy (UK) SPA, Calf of Eday (UK) SPA, Copinsay (UK) SPA
Common tern	Breydon Water (UK) SPA & Ramsar, Coquet Island (UK) SPA, Cromarty Firth (UK) SPA & Ramsar, Dungeness, Romney Marsh and Rye Bay (UK) SPA, Farne Islands (UK) SPA, Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA, Foulness (Mid-Essex Coast Phase 5) (UK) SPA & Ramsar, Greater Wash (UK) SPA, Imperial Dock Lock, Leith (UK) SPA, Inner Moray Firth (UK) SPA & Ramsar, Medway Estuary and Marshes (UK) SPA & Ramsar, North Norfolk Coast (UK) SPA & Ramsar, Northumberland Marine (UK) SPA, Outer Thames Estuary (UK) SPA, The Wash (UK) SPA & Ramsar, Ythan Estuary, Sands of Forvie and Meikle Loch (UK) SPA

Species	European site name
	& Ramsar, Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA
Arctic tern	Auskerry (UK) SPA, Coquet Island (UK) SPA, Fair Isle (UK) SPA, Farne Islands (UK) SPA, Fetlar (UK) SPA, Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA, Foula (UK) SPA, Mousa (UK) SPA, Northumberland Marine (UK) SPA, Northumbria Coast (UK) SPA & Ramsar, Papa Stour (UK) SPA, Papa Westray (North Hill and Holm) (UK) SPA, Pentland Firth Islands (UK) SPA, Rousay (UK) SPA, Sumburgh Head (UK) SPA, West Westray (UK) SPA, Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA
Sandwich tern	Alde-Ore Estuary (UK) SPA & Ramsar, Coquet Island (UK) SPA, Dungeness, Romney Marsh and Rye Bay (UK) SPA, Farne Islands (UK) SPA, Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA, Foulness (Mid-Essex Coast Phase 5) (UK) SPA & Ramsar, Greater Wash (UK) SPA, Loch of Strathbeg (UK) SPA & Ramsar, North Norfolk Coast (UK) SPA & Ramsar, Northumberland Marine (UK) SPA, Ythan Estuary, Sands of Forvie and Meikle Loch (UK) SPA & Ramsar
Kittiwake	Buchan Ness to Collieston Coast (UK) SPA, Calf of Eday (UK) SPA, Copinsay (UK) SPA, East Caithness Cliffs (UK) SPA, Fair Isle (UK) SPA, Flamborough and Filey Coast (UK) SPA, Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA, Foula (UK) SPA, Fowlsheugh (UK) SPA, Hermaness, Saxa Vord and Valla Field (UK) SPA, Hoy (UK) SPA, Marwick Head (UK) SPA, North Caithness Cliffs (UK) SPA, Noss (UK) SPA, Rousay (UK) SPA, St Abb's Head to Fast Castle (UK) SPA, Sumburgh Head (UK) SPA, Troup, Pennan and Lion's Head (UK) SPA, West Westray (UK) SPA, Farne Islands (UK) SPA, Northumberland Marine (UK) SPA
Common gull	Tips of Corsemaul and Tom Mor (UK) SPA
Little gull	No sites
Guillemot	Buchan Ness to Collieston Coast (UK) SPA, Calf of Eday (UK) SPA, Copinsay (UK) SPA, East Caithness Cliffs (UK) SPA, Fair Isle (UK) SPA, Farne Islands (UK) SPA, Flamborough and Filey Coast (UK) SPA, Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA, Foula (UK) SPA, Fowlsheugh (UK) SPA, Hermaness, Saxa Vord and Valla Field (UK) SPA, Hoy (UK) SPA, Marwick Head (UK) SPA, North Caithness Cliffs (UK) SPA, Northumberland Marine (UK) SPA, Noss (UK) SPA, Rousay (UK) SPA, St Abb's Head to Fast Castle (UK) SPA, Sule Skerry and Sule Stack (UK) SPA, Sumburgh Head (UK) SPA, Troup, Pennan and Lion's Head (UK) SPA, West Westray (UK) SPA

Species	European site name
Razorbill	East Caithness Cliffs (UK) SPA, Fair Isle (UK) SPA, Flamborough and Filey Coast (UK) SPA, Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA, Foula (UK) SPA, Fowlsheugh (UK) SPA, North Caithness Cliffs (UK) SPA, St Abb's Head to Fast Castle (UK) SPA, Troup, Pennan and Lion's Head (UK) SPA, West Westray (UK) SPA

5.6 Summary of European Sites Identified for Screening

5.6.1 Potential spatial connectivity to 148 European sites has been identified. These sites, which are summarised in **Table 5.7** will be taken forward for Screening. Only features for which potential spatial connectivity exists are listed in **Table 5.7,** however all site features are listed in the Planning Inspectorate Screening matrices at **Appendix A.**

Table 5.7 Summary of all European sites (and relevant features) identified for consideration of LSE at Screening (✓yes ✗ no) (NA – not applicable, no pathway to effects)

No.	Designated site name	Qualifying Criteria	Relevant feature(s)*	Within relevant range of:		
				Array	Offshore cable corridor	Onshore cable corridor
1	River Itchen SAC	2	Atlantic Salmon	✓	✓	✗
2	Arun Valley (UK) Ramsar UK11004	1B	Northern pintail Waterbird assemblage	✗	✗	✓
3	Arun Valley (UK) SPA UK9020281	1B	Bewick's swan	✗	✗	✓
4	Arun Valley (UK) SAC UK0030366	3	Lesser whirlpool ram's-horn snail	✗	✗	✓
5	The Mens (UK) SAC UK0012716	1B and 2	Barbastelle bat	✗	✗	✓
6	Duncton to Bignor Escarpment (UK) SAC	3	*Asperulo-Fagetum* beech forests	✗	✗	✓
7 **8**	Pagham Harbour (UK) SPA and Ramsar UK11052	1 and 2	Dark bellied Brent geese Common tern	✗ ✓	✗ ✓	✓ ✓

No.	Designated site name	Qualifying Criteria	Relevant feature(s)*	Within relevant range of:		
				Array	Offshore cable corridor	Onshore cable corridor
9	Solent Maritime (UK) SAC UK0030059	3	Estuaries	✓	✓	NA
			Spartina swards	✓	✓	NA
			Atlantic salt meadows	✓	✓	NA
			Sandbanks which are slightly covered by sea water all the time	✓	✓	NA
			Mudflats and sandflats not covered by seawater at low tide	✓	✓	NA
			Coastal lagoons	✓	✓	NA
			Salicornia and other annuals colonizing mud and sand	✓	✓	NA
10	South Wight Maritime (UK) SAC	3	Reefs	✓	✓	NA
			Submerged or partially submerged sea caves	✓	✓	NA
				✓	✓	NA
11	Solent and Isle of Wight lagoons SAC (UK) UK0017073	3	Coastal lagoons*priority feature	✓	✓	NA
12	Littoral Cauchois (FR) SAC FR2310045	2	Grey seal	✓	✓	✓
		2	Sea lamprey	✓	✓	×
			River lamprey	✓	✓	×
			Twait shad	✓	✓	×
13	Southern North Sea (UK) SAC UK0030395	2	Harbour porpoise	✓	✓	NA
14	Ridens et dunes hydrauliques du détroit du Pas-de-	2	Grey seal, harbour seal	✓	✓	NA

No.	Designated site name	Qualifying Criteria	Relevant feature(s)*	Within relevant range of:		
				Array	Offshore cable corridor	Onshore cable corridor
	Calais SAC / SCI (FR) FR3102004					
15	Récifs et marais arrière-littoraux du Cap Lévi à la Pointe de Saire (FR) FR2500085	2	Harbour porpoise, bottlenose dolphin, grey seal, harbour seal	✓	✓	NA
16	Recifs Griz-Nez Blanc-Nez SAC (FR) FR3102003	2	Harbour porpoise, grey seal, harbour seal	✓	✓	NA
17	Baie de Canche et Couloir des trois estuaries SAC (FR) FR3102005	2	Harbour porpoise, grey seal, harbour seal	✓	✓	NA
18	Estuaire de la Canche, dunes picardes plaquées sur l'ancienne falaise, forêt d'Hardelot et falaise d'Equihe SAC/SCI (FR) FR3100480	2	Grey seal, harbour seal	✓	✓	NA
19	Estuaires et littoral picards (baies de Somme et d'Authie) SAC / SCI (FR) FR2200346	2	Grey seal, harbour seal	✓	✓	NA
20	Baie de Seine occidentale SAC (FR) FR2502020	2	Harbour porpoise, grey seal, harbour seal	✓	✓	NA
21	Falaises du Cran aux Oeufs et du Cap Gris-Nez,	2	Bottlenose dolphin, grey	✓	✓	NA

No.	Designated site name	Qualifying Criteria	Relevant feature(s)*	Within relevant range of:		
				Array	Offshore cable corridor	Onshore cable corridor
	Dunes du Chatelet, Marais de Tardinghen et Dunes de Wissan SAC/ SCI (FR) FR3100478		seal, harbour seal			
22	Marais du Cotentin et du Bessin - Baie des Veys SAC / SCI (FR) FR2500088	2	Grey seal	✓	✓	NA
23	Récifs et landes de la Hague SAC/SCI (FR) FR2500084	2	Bottlenose dolphin, grey seal	✓	✓	NA
24	Estuaire de la Seine SAC / SCI (FR) FR2300121	2	Grey seal	✓	✓	NA
25	Baie de Seine orientale SAC (FR) FR2502021	2	Harbour porpoise, bottlenose dolphin, grey seal	✓	✓	NA
26	Anse de Vauville (FR) SAC/SCI (FR) FR2502019	2	Bottlenose dolphin, grey seal	✓	✓	NA
27	Bancs de Flandres SAC/SCI (FR) FR3102002	2	Harbour porpoise, grey seal	✓	✓	NA
28	Banc et récifs de Surtainville (FR) FR2502018	2	Bottlenose dolphin	✓	✓	NA
29	Vlaamse Banken SAC (BE) BEMNZ0001	2	Harbour porpoise	✓	✓	NA
30	SBZ 1 / ZPS 1 (BE) BEMNZ0002	2	Harbour porpoise	✓	✓	NA

No.	Designated site name	Qualifying Criteria	Relevant feature(s)*	Within relevant range of:		
				Array	Offshore cable corridor	Onshore cable corridor
31	Chausey SAC (FR) FR2500079	2	Bottlenose dolphin	✓	✓	NA
32	Nord Bretagne DH SAC/SCI (FR) FR2502022	2	Bottlenose dolphin	✓	✓	NA
33	SBZ 2 / ZPS 2 (BE) BEMNZ0003	2	Harbour porpoise	✓	✓	NA
34	Cap d'Erquy-Cap Fréhel (FR) FR5300011	2	Bottlenose dolphin	✓	✓	NA
35	Côte de Cancale à Paramé (FR) SAC FR5300052	2	Bottlenose dolphin	✓	✓	NA
36	SBZ 3 / ZPS 3 (BE) BEMNZ0004	2	Harbour porpoise	✓	✓	NA
37	Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard (FR) FR5300012	2	Bottlenose dolphin	✓	✓	NA
38	Vlakte van de Raan SAC (BE) BEMNZ0005	2	Harbour porpoise	✓	✓	NA
39	Côte de Granit rose-Sept-Iles SAC (FR) FR5300009	2	Bottlenose dolphin	✓	✓	NA
40	Abers - Côtes des légendes (FR) SAC/SCI FR5300017	2	Bottlenose dolphin	✓	✓	NA
41	Ouessant-Molène SAC/ SCI (FR) FR5300018	2	Bottlenose dolphin	✓	✓	NA

No.	Designated site name	Qualifying Criteria	Relevant feature(s)*	Within relevant range of:		
				Array	Offshore cable corridor	Onshore cable corridor
42	Noordzeekustzone SAC (NL) NL9802001	2	Harbour porpoise	✓	✓	NA
43	Klaverbank SAC (NL) NL2008002	2	Harbour porpoise	✓	✓	NA
44	Chaussée de Sein SAC (FR) FR5302007	2	Bottlenose dolphin	✓	✓	NA
45	Mers Celtiques - Talus du golfe de Gascogne SAC (FR) FR5302015	2	Bottlenose dolphin	✓	✓	NA
46	Doggerbank SCI (UK) UK0030352	2	Harbour porpoise	✓	✓	NA
47	Doggersbank SAC (NL) NL2008001	2	Harbour porpoise	✓	✓	NA
48	Borkum-Riffgrund SCI (DE) DE2104301	2	Harbour porpoise	✓	✓	NA
49	Nationalpark Niedersachsisches Wattenmeer SAC (DE) DE2306301	2	Harbour porpoise	✓	✓	NA
	Sylter Aussenriff SCI (DE) DE1209301	2	Harbour porpoise	✓	✓	NA
50	Helgoland mit Helgoländer Felssockel SAC (DE) DE1813391	2	Harbour porpoise	✓	✓	NA
51	Steingrund SAC (DE) DE1714391	2	Harbour porpoise	✓	✓	NA
52	Hamburgisches Wattenmeer SAC (DE) DE2016301	2	Harbour porpoise	✓	✓	NA

No.	Designated site name	Qualifying Criteria	Relevant feature(s)*	Within relevant range of:		
				Array	Offshore cable corridor	Onshore cable corridor
53	NTP S-H Wattenmeer und angrenzende Kustengebiete SAC (DE) DE0916491	2	Harbour porpoise	✓	✓	NA
54	Kosterfjorden-Väderöfjorden SAC (DE) SE0520170	2	Harbour porpoise	✓	✓	NA
55	Solent and Dorest Coast (UK) SPA	2	Common tern Little tern Sandwich tern	✓ × ✓	✓ ✓ ✓	✓ ✓ ✓
56 **57**	Chicester and Langstone Harbours (UK) SPA and Ramsar	2	Common tern Sandwich tern	× ✓	✓ ✓	✓ ✓
58 **59**	Solent and Southampton Water (UK) SPA and Ramsar	2	Sandwich tern	✓	✓	✓
60	Dungeness, Romney Marsh and Rye Bay (UK) SPA	4	Common tern Sandwich tern	✓ ✓	✓ ✓	NA
61	Littoral seino-marin (FR) SPA	2	Fulmar Kittiwake Lesser black-backed gull Great black-backed gull	✓ ✓ ✓ ✓	✓ ✓ ✓ ×	NA NA NA NA
62 **63**	Medway Estuary and Marshes (UK) SPA and Ramsar	4	Common tern	✓	✓	NA
64	Outer Thames Estuary (UK) SPA	4	Common tern	✓	✓	NA

No.	Designated site name	Qualifying Criteria	Relevant feature(s)*	Within relevant range of:		
				Array	Offshore cable corridor	Onshore cable corridor
65 **66**	Foulness (Mid-Essex Coast Phase 5) (UK) SPA and Ramsar	4	Common tern Sandwich tern	✓ ✓	✓ ✓	NA NA
67	Alderney West Coast and the Burhou Islands Ramsar site	2	Gannet	✓	✓	NA
68	Falaise du Bessin Occidental (FR) SPA	2	Fulmar Kittiwake	✓ ✓	✓ ✓	NA NA
69 **70**	Alde-Ore Estuary (UK) SPA and Ramsar	4	Sandwich tern Lesser black-backed gull	✓ ✓	✓ ✓	NA NA
71	Chausey (FR) SPA	2	Gannet	✓	✓	NA
72	Cap d'Erquy-Cap Fréhel (FR) SPA	2	Fulmar	✓	✓	NA
73 **74**	The Wash (UK) SPA and Ramsar	4	Common tern	✓	✓	NA
75 **76**	Breydon Water (UK) SPA and Ramsar	4	Common tern	✓	✓	NA
77	Tregor Goëlo (FR) SPA	2	Fulmar	✓	✓	NA
78	Greater Wash (UK) SPA	4	Common tern Sandwich tern	✓ ✓	✓ ✓	NA NA
79 **80**	North Norfolk Coast (UK) SPA and Ramsar	4	Common tern Sandwich tern	✓ ✓	✓ ✓	NA NA
81	Côte de Granit Rose-Sept Iles (FR) SPA	2	Manx shearwater Fulmar European storm petrel Gannet	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	NA NA NA NA

No.	Designated site name	Qualifying Criteria	Relevant feature(s)*	Within relevant range of:		
				Array	Offshore cable corridor	Onshore cable corridor
82	Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a moroedd Benfro (UK) SPA	2	Manx shearwater European storm petrel	✓ ✓	✓ ✓	NA NA
83	Glannau Aberdaron and Ynys Enlli / Aberdaron Coast and Bardsey Island (UK) SPA	2	Manx shearwater	✓	✓	NA
84	Flamborough and Filey Coast (UK) SPA	4	Kittiwake Guillemot Razorbill Gannet Fulmar Herring gull	✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓	NA NA NA NA NA NA
85	Ouessant-Molène (FR) SPA	2	Manx shearwater Fulmar	✓ ✓	✓ ✓	NA NA
86	Camaret (FR) SPA	2	Fulmar	✓	✓	NA
87	Iles Houat-Hoëdic (FR) SPA	2	Manx shearwater	✓	✓	NA
88	Cap Sizun (FR) SPA	2	Manx shearwater Fulmar	✓ ✓	✓ ✓	NA NA
89 **90**	Isles of Scilly (UK) SPA and Ramsar	2	Manx shearwater Fulmar	✓ ✓	✓ ✓	NA NA
91 **92**	Northumbria Coast (UK) SPA and Ramsar	4	Arctic tern	✓	✓	NA
93	Northumberland Marine (UK) SPA	4	Arctic tern Sandwich tern	✓ ✓	✓ ✓	NA NA

No.	Designated site name	Qualifying Criteria	Relevant feature(s)*	Within relevant range of:		
				Array	Offshore cable corridor	Onshore cable corridor
			Common tern	✓	✓	NA
			Kittiwake	✓	✓	NA
			Guillemot	✓	✓	NA
94	Coquet Island (UK) SPA	4	Common tern	✓	✓	NA
			Arctic tern	✓	✓	NA
			Sandwich tern	✓	✓	NA
95	Farne Islands (UK) SPA	4	Common tern	✓	✓	NA
			Arctic tern	✓	✓	NA
			Sandwich tern	✓	✓	NA
			Kittiwake	✓	✓	NA
			Guillemot	✓	✓	NA
96	St Abb's Head to Fast Castle (UK) SPA	4	Kittiwake	✓	✓	NA
			Herring gull	✓	✓	NA
			Guillemot	✓	✓	NA
97	Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA	4	Lesser black-backed gull	✓	✓	NA
			Gannet	✓	✓	NA
			Herring gull	✓	✓	NA
			Common tern	✓	✓	NA
			Arctic tern	✓	✓	NA
			Sandwich tern	✓	✓	NA
			Kittiwake	✓	✓	NA
			Guillemot	✓	✓	NA
			Razorbill	✓	✓	NA
			Manx shearwater	✓	✓	
98	Imperial Dock Lock, Leith (UK) SPA	4	Common tern	✓	✓	NA
99	Deenish Island and Scariff Island (IE) SPA	2	Manx shearwater	✓	✓	NA
100	Fowlsheugh (UK) SPA	4	Fulmar	✓	✓	NA
			Herring gull	✓	✓	NA
				✓	✓	

No.	Designated site name	Qualifying Criteria	Relevant feature(s)*	Within relevant range of:		
				Array	Offshore cable corridor	Onshore cable corridor
			Kittiwake Guillemot Razorbill	✓ ✓	✓ ✓	NA NA NA
101	Puffin Island (IE) SPA	2	Manx shearwater	✓	✓	NA
102	Skelligs (IE) SPA	2	Manx shearwater	✓	✓	NA
103	Blasket Island (IE) SPA	2	Manx shearwater	✓	✓	NA
104	Cruagh Island (IE) SPA	2	Manx shearwater	✓	✓	NA
105 **106**	Ythan Estuary, Sands of Forvie and Meikle Loch (UK) SPA and Ramsar	4	Sandwich tern Common tern	✓ ✓	✓ ✓	NA NA
107	Buchan Ness to Collieston Coast (UK) SPA	4	Fulmar Herring gull Kittiwake Guillemot	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	NA NA NA NA
108 **109**	Loch of Strathbeg (UK) SPA and Ramsar	4	Sandwich tern	✓	✓	NA
110	Troup, Pennan and Lion's Head (UK) SPA	4	Kittiwake Herring gull Fulmar Kittiwake Guillemot	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	NA NA NA NA NA
111	Rum (UK) SPA	2	Manx shearwater	✓	✓	NA
112 **113**	Inner Moray Firth (UK) SPA and Ramsar	4	Common tern	✓	✓	NA

No.	Designated site name	Qualifying Criteria	Relevant feature(s)*	Within relevant range of:		
				Array	Offshore cable corridor	Onshore cable corridor
114 **115**	Cromarty Firth (UK) SPA and Ramsar	4	Common tern	✓	✓	NA
116	East Caithness Cliffs (UK) SPA	4	Razorbill Fulmar Herring gull Great black-backed gull Kittiwake Guillemot	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓	NA NA NA NA NA NA
117	North Caithness Cliffs (UK) SPA	4	Razorbill Guillemot Kittiwake Fulmar	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	NA NA NA NA
118	Pentland Firth Islands (UK) SPA	4	Arctic tern	✓	✓	NA
119	Hoy (UK) SPA	4	Fulmar Kittiwake Guillemot	✓ ✓ ✓	✓ ✓ ✓	NA NA NA
120	Copinsay (UK) SPA	4	Fulmar Great black-backed gull Kittiwake Guillemot	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	NA NA NA NA
121	Auskerry (UK) SPA	4	European storm petrel Arctic tern	✓ ✓	✓ ✓	NA NA
122	St Kilda (UK) SPA	4	Manx shearwater	✓	✓	NA
123	Marwick Head (UK) SPA	4	Kittiwake Guillemot	✓ ✓	✓ ✓	NA NA
124	Rousay (UK) SPA	4	Kittiwake Guillemot Fulmar Arctic tern	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	NA NA NA NA

No.	Designated site name	Qualifying Criteria	Relevant feature(s)*	Within relevant range of:		
				Array	Offshore cable corridor	Onshore cable corridor
125	Calf of Eday (UK) SPA	4	Fulmar Great black-backed gull Kittiwake Guillemot	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	NA NA NA NA
126	Sule Skerry and Sule Stack (UK) SPA	4	European storm petrel Leache's storm petrel Guillemot Gannet	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	NA NA NA NA
127	West Westray (UK) SPA	4	Fulmar Arctic tern Kittiwake Guillemot	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	NA NA NA NA
128	Papa Westray (North Hill and Holm) (UK) SPA	4	Arctic tern	✓	✓	NA
129	Fair Isle (UK) SPA	4	Kittiwake Guillemot Razorbill Fulmar Gannet Arctic tern	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓	NA NA NA NA NA NA
130	Sumburgh Head (UK) SPA	4	Fulmar Kittiwake Guillemot Arctic tern	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	NA NA NA NA
131	Noss (UK) SPA	4	Fulmar Gannet Kittiwake Guillemot	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	NA NA NA NA
132	Foula (UK) SPA	4	Red-throated diver Arctic tern Kittiwake Razorbill	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	NA NA NA NA NA

No.	Designated site name	Qualifying Criteria	Relevant feature(s)*	Within relevant range of:		
				Array	Offshore cable corridor	Onshore cable corridor
			Guillemot Fulmar LeacheSs storm petrel	✓ ✓	✓ ✓	NA NA
133	Papa Stour (UK) SPA	4	Arctic tern	✓	✓	NA
134 **135**	Ronas Hill - North Roe and Tingon (UK) SPA and Ramsar	4	Red-throated diver	✓	✓	NA
136	Otterswick and Graveland (UK) SPA	4	Red-throated diver	✓	✓	NA
137	Fetlar (UK) SPA	4	Fulmar Arctic tern	✓ ✓	✓ ✓	NA NA
138	Ramna Stacks and Gruney (UK) SPA	4	Leaches storm petrel	✓	✓	NA
139	Hermaness, Saxa Vord and Valla Field (UK) SPA	4	Kittiwake Guillemot Fulmar Gannet	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	NA NA NA NA
140	Copeland Islands (UK) SPA	2	Manx shearwater Arctic tern	✓ ✓	✓ ✓	NA NA
141 **142**	Caithness and Sutherland Peatlands (UK) SPA and Ramsar	4	Red-throated diver	✓	✓	NA
143	Orkney Mainland Moors (UK) SPA	4	Red-throated diver	✓	✓	NA
144	Mousa (UK) SPA	4	European storm petrel Arctic tern	✓ ✓	✓ ✓	NA

No.	Designated site name	Qualifying Criteria	Relevant feature(s)*	Within relevant range of:		
				Array	Offshore cable corridor	Onshore cable corridor
145	Tips of Corsemaul and Tom Mor (UK) SPA	4	Common gull	✓	✓	NA
146	North Rona and Sula Sgeir (UK) SPA	4	Gannet	✓	✓	NA
147	Ailsa Craig (UK) SPA	4	Gannet	✓	✓	NA
148	Grassholm (UK) SPA	4	Gannet	✓	✓	NA

* Only European site features to which an effect-pathway has been identified are listed in this table

6. Consideration of Likely Significant Effects

6.1.1 The European site selection process reported in **Section 4.6.4** generated a list of 148 European sites (summarised in **Table 5.7)** for which the potential for spatial overlap between the Scoping Boundary and the sites indicates theoretical connectivity and the need to consider the potential for LSE.

6.1.2 Rampion 2 associated activities and operations with the potential to result in LSE are presented in in **Table 6.1** (for construction and decommissioning) and **Table 6.2 (**for operation and maintenance). At Screening, consideration was given to European site features with the theoretical potential (established with reference to the parameters set out in **Table 5.7)** to be located within the effect ranges described, via the pathways identified in **Table 6.1** and **Table 6.2** below.

6.1.3 The consideration of the potential for LSE is based on the evidence summarised in **Section 4** (the baseline environment) and the scope and nature of the proposed project activities, together with information about the European sites.

6.1.4 The findings are based on current information and may evolve in line with design developments, baseline surveys or assessments and consultation (including the Evidence Plan process).

6.1.5 The full HRA Screening for LSEs to the relevant European sites identified in **Table 5.7** is presented in the Screening matrices in **Appendix A**. A summary of the findings is presented in **Table 6.1** (Construction and decommissioning) and **Table 6.2** (operation and maintenance).

Table 6.1 Effects during construction (and decommissioning) for sensitive receptor groups, Screening categories (as applied in the PINS matrices) and maximum anticipated potential direct effect ranges

Receptor group	Screening category	Effect range	Source-pathway-receptor path and justification for range applied to Screening
Construction			
Subtidal and intertidal benthic ecology	Physical loss/ disturbance	Within the Scoping Boundary	Temporary loss and /or physical disturbance of surface substrate associated with activities such as cable laying operations, jack-up leg impacts and seabed preparation works for foundations and associated scour or cable protection installation could result in temporary habitat loss, and reduced feature extent and / or quality. Direct physical disturbance would not occur outside the Scoping Boundary.
	Suspended sediment and deposition	Up to 32 km from the Scoping Boundary (offshore components)	Sediment disturbance during the installation of cables, WTG foundations and scour protection is expected to increase the concentration of sediments in the water column and possibly the extent and thickness of sediments subsequently deposited on marine habitats within the dispersal range of the sediment plume. Changes to the sedimentary regime can harm certain benthic or intertidal communities (i.e. filter feeders) through smothering, abrasion and enhanced energetic expenditure (to self-clean). Modelling from Rampion 1 indicates the range of the sediment plume would not exceed 15km.
	Pollution	Within 500m of the Scoping Boundary	Pollution from leaks and / or accidental spillages of fuels or oils used in plant could lead to a reduction in marine water quality should pollutants reach the marine environment and disperse. The disturbance of contaminated sediment could affect the sediment and water quality. Potential implications for benthic or intertidal ecology include impaired biological function, mortality and lowered resilience to other environmental stressors. Rampion 2 has limited potential for significant

Receptor group	Screening category	Effect range	Source-pathway-receptor path and justification for range applied to Screening
			contamination events. Should any occur, these are expected to be small-scale, short-lived and subject to significant dilution and dispersion in the open coastal environment. Effects would be reduced to *de minimis* levels within the immediate vicinity of the Scoping Boundary.
	Invasive Non-Native Species (INNS)	To be assessed on a case by case basis and with reference to potential vectors and control measures.	The arrival and movement of construction vessels and land-based plant represent potential vectors for the introduction or spread of INNS. Potential implications for reduced feature health, resilience or mortality associated with changes to ecological communities (regime shifts) such as changes in prey availability, or habitat structure.
	Hydrology (onshore)	Within 500 m of the onshore component of the Scoping Boundary and reviewed on a case-by-case basis with reference to the potential source of hydrological interference and the location of potential receptors within the catchment.	Works on the inter-tidal (e.g. cable related excavations and/or trenching, or the diversion of watercourses) could disrupt the hydrological functioning of coastal and or benthic habitats in close proximity (e.g. altered saline balance, run-off scour). Localised habitat loss and /or degradation of benthic habitats and communities could result.
Harbour porpoise	Underwater noise	HRA required for all new coastal and marine developments (coastal and marine) using pile driving	Pile driving during foundation installation, unexploded ordnance (UXO) clearance and certain types of survey represent the main sources. Other sources include cable laying, support vessels, dredging and rock laying (for scour protection and cable protection).

Receptor group	Screening category	Effect range	Source-pathway-receptor path and justification for range applied to Screening
		within the site, or within 26km of site boundaries (JNCC and Natural England, 2019)	Potential effects range from injury and /or mortality, through to disturbance displacement.
Marine mammals	Underwater noise	An adaptive study area for assessments will be defined based on site specific underwater noise modelling to account for potential impacts from noise. Reference to this modelling will determine the spatial range of injury and disturbance impacts with reference to known disturbance thresholds.	
	Vessel disturbance	Within the Scoping Boundary	Avoidance of construction support vessels could result in behavioural disturbance or displacement. Impacts could include stress, greater energetic costs of foraging or reduced foraging activities leading to reduced feature health and resilience.
	Audio / visual disturbance (above surface) (pinnipeds only)	Within 500m of the Scoping Boundary	Seals hauled-out or surfaced adjacent to works could be disturbed by unfamiliar visual stimuli (e.g. in-water infrastructure, machinery and people or lighting) or noise generating activities above water. The potential for disturbance is considered low and likely to be contained within 500m of the application boundary. Significant effects would only result where major haul-out areas are present within this range.

Receptor group	Screening category	Effect range	Source-pathway-receptor path and justification for range applied to Screening
			A distance of 500m is proposed with reference to peer-reviewed reports of visual disturbance distances observed for hauled-out harbour seals due to approaching vessels (within 200–300m) (Suryan and Harvey, 1999), within 300m with respect to tour boats (Henry and Hammill, 2001) 140 m in response to kayaks (Johnson and Acevedo-Gutierrez, 2007) and pedestrian activity behind a pupping group (of common seals) in the Netherlands at <200 m (Osinga *et al.,* 2012).
	Collision risk	Along the transit route from port and within the search area	Increased vessel traffic during construction may result in an increased collision risk (injury and or mortality) to marine mammals.
	Effects on prey	Up to 32 km from the Scoping Boundary	Prey species could be affected by changes to water quality, suspended sediment (invertebrates, eggs, and larvae are most vulnerable) underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on harbour porpoise could result due to displaced or reduced foraging resource. Screening distance is aligned with the precautionary distance applied to Screen for effects related to sediment dispersal. This range will be revisited with reference to the noise modelling/fish impact assessment undertaken to support the EIA.
	Pollution	Within the Scoping Boundary	Construction activities (e.g. substrate excavations) and plant (e.g. accidental spillages) could generate emissions to the marine environment. Exposure to toxins could directly affect feature health, damage immune systems and bioaccumulate in tissues leading to reduced species fitness, increased susceptibility to disease and in extreme cases, mortality. Rampion 2 has limited potential for significant contamination events. Should any occur, these are

Receptor group	Screening category	Effect range	Source-pathway-receptor path and justification for range applied to Screening
			expected to be small-scale, short-lived and subject to significant dilution and dispersion in the open coastal environment. Effects would be reduced to *de minimis* levels within the immediate vicinity of the Scoping Boundary.
	Suspended sediment and deposition	Up to 32 km from the Scoping Boundary	A temporary increase in suspended sediment concentrations and associated sediment deposition may arise from construction activities (e.g. cable and foundation installation). This may temporarily impair the ability to forage (visual impairment), leading to reduce species health and resilience.
	Physical disturbance (direct habitat loss)	Within the Scoping Boundary	Temporary loss and /or physical disturbance of surface substrate associated with activities such as cable laying operations, jack-up leg impacts and seabed preparation works for foundations and associated scour or cable protection installation could result in temporary habitat loss, and reduced feature extent and / or quality. Direct physical disturbance would not occur outside the Scoping Boundary.
Offshore ornithology	Disturbance and displacement	Intertidal: 0.5km Offshore: 4km	Behavioural and population changes resulting from disturbance caused by sources of noise and / or vibration (air or ground borne) and/or visual disturbances, such as the presence of structures, or lighting, or people, or plant. The Screening ranges are applied with reference to advice from SNCBs (SNCBs, 2017)
	Changes in prey availability and behaviour	Up to 32km from the Scoping Boundary (offshore components)	Indirect effects on fish prey due to suspended sediment and underwater noise. Screening distance is aligned with the precautionary distance applied to Screen for effects related to

Receptor group	Screening category	Effect range	Source-pathway-receptor path and justification for range applied to Screening
			sediment dispersal. This range will be revisited with reference to the noise modelling/fish impact assessment within the EIA for Rampion 2.
Intertidal ornithology	Physical habitat loss/ disturbance	Within the Scoping Boundary	Temporary land-take and /or physical ground disturbance associated with construction activities could result in the loss, damage or fragmentation of habitats supporting birds.
	Temporary disturbance / damage to habitats	Within the Scoping Boundary	
	Habitat fragmentation or severance	To be assessed on a case by case basis with reference to the distribution of supporting habitat.	Habitat loss could result from habitat fragmentation should Rampion 2 activities (e.g. noise, or the presence of plant, or constructions workers) deter birds from transiting between their favoured habitat patches. Professional judgement will be used to consider the likelihood and extent of habitat fragmentation for qualifying features.
	Visual disturbance to species	Within 500 m of the search area	Visual stimuli (e.g. the movement of plant and personnel and / or artificial lighting) could be observed by birds present within the vicinity of works (e.g. wintering wader species feeding on inland fields at high tide, or those utilising or transiting other areas). Disturbance of birds could result in changes to foraging behaviour and loss of condition. A precautionary buffer of 500m is proposed based on species most susceptible to winter disturbance (shelduck) reported in estuarine bird disturbance studies (e.g. Cutts *et al..,* 2013).

Receptor group	Screening category	Effect range	Source-pathway-receptor path and justification for range applied to Screening
	Noise disturbance to species	Particular regard given to the potential for non-physical (noise and visual) disturbance to create a barrier to features e.g. between roosts and foraging sites or between summer and winter habitats.	Qualifying species using inland habitats for foraging and roosting could be subject to noise generated by vehicles, plant and operatives and disturbance related impacts. A precautionary buffer of 500m is proposed based on species most susceptible to disturbance (shelduck) reported in estuarine bird disturbance studies (e.g. Cutts *et al*., 2013).
	INNS	To be assessed on a case by case basis and with reference to potential vectors and control measures.	The arrival and movement of construction vessels and land-based plant represent potential vectors for the introduction or spread of INNS. Potential implications for feature health, resilience or mortality associated with changes to ecological communities (regime shifts) such as changes in prey availability, or habitat structure.
	Pollution	Within 100 m of the Scoping Boundary. Also, reviewed on case-by-case basis.	Birds utilising areas within the Scoping Boundary are at risk of direct (e.g. toxic exposure) and indirect effects (via prey) from accidental pollution. Emissions could be generated by spillages of fuels or leaking construction plant. Emissions to ground or surface water bodies and effects are therefore not expected to be apparent beyond 100 m of the Scoping Boundary, but this is reviewed on a case-by-case basis with reference to potential hydrological pathways and the location of receptors (e.g. supporting habitats and species within the catchment.
Migratory fish (and prey	Suspended sediment and deposition	Up to 32 km from the search area	A temporary increase in suspended sediment concentrations and associated sediment deposition may arise from construction activities (e.g. cable and foundation installation). Potential for direct effects to

Receptor group	Screening category	Effect range	Source-pathway-receptor path and justification for range applied to Screening
species for qualifying species)			fish present within the dispersal plume (e.g. navigation.) A reduction in the quality of foraging habitat could result in indirect effects (via food sources).
	Underwater noise	Consideration given to potential effects on fish passage to freshwater river SACs within 100 km of the Array.	Construction activities, in particular pile-driving activities, will result in increased levels of underwater noise. Potential impacts, which are dependent on the level of noise, may include permanent or temporary effects and behavioural disturbance in sensitive species. Particular risk is related to the potential for noise to create a barrier intersecting migratory routes.
	Physical loss/ disturbance	Within the Scoping Boundary	Construction phase works may present potential for temporary, direct habitat loss and disturbance.
	Pollution	Within the Scoping Boundary	Construction activities may result in accidental pollution which can affect the sediment and water quality, with potential implications for migratory fish.
	Effects on prey	Up to 32 km from the Scoping Boundary	Indirect effects on prey resource due to suspended sediment and underwater noise. Screening distance is aligned with the precautionary distance applied to Screen for effects related to sediment dispersal. This range will be revisited with reference to the noise modelling/fish impact assessment within the Environmental Statement for Rampion 2.
Terrestrial ecology	Changes in hydrology	Within the Scoping Boundary	Changes to groundwater levels and flows e.g. due to construction vehicles (causing soil compaction for instance), inadequate soil restoration and / or the interruption of hydrological pathways. Potential effects include loss of ground or surface water dependent habitats that support foraging or breeding qualifying species.

Receptor group	Screening category	Effect range	Source-pathway-receptor path and justification for range applied to Screening
	Pollution events	500m	The pollution of substrates, often soils, or waterbodies that might result directly from the accidental release of hazardous substances (e.g. as the result of a mechanical failure). Direct exposure to toxins could result in supporting habitat loss, or directly affect feature health, damage immune systems and bioaccumulate in tissues leading to reduced species fitness, increased susceptibility to disease and in extreme cases, mortality.
	Emissions to air	200m from the roadside of access routes (including public highway)	Emissions to air associated with combustion exhaust gases (such as NOx) from site plant and on-site traffic and roads carrying construction traffic and the potential release of dust during construction e.g. following excavation, tracking of machinery and storage of soils. Exceedance of critical values for air pollutants may modify the chemical status of substrate supporting habitats, accelerating or damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive species.
	INNS	To be assessed on a case by case basis and with reference to potential vectors and control measures.	The introduction or spread of INNS due movements of machinery or personnel between or throughout sites. Potential implications for feature health, resilience or mortality associated with changes to ecological communities (regime shifts) such as changes in prey availability, or habitat structure. Effects associated with INNS are only likely to be experienced within the where machinery movements, soil stripping and storage would be undertaken. However, as there is potential for wider effects to occur via materials moving off site effects have been assessed on a case-by-case basis

Receptor group	Screening category	Effect range	Source-pathway-receptor path and justification for range applied to Screening
	Land take / land cover change	Within the Scoping Boundary	Altered land cover, vegetation and habitat composition caused during the installation of the onshore cable (e.g. from excavations, plant movements, construction compounds and / or trampling).
	Fragmentation of habitats	Up to 18.5 km. To be assessed on a case by case basis with reference to the distribution of supporting habitat.	Temporary land-take and /or physical ground disturbance associated with construction activities could result in the loss, damage or fragmentation or severance of habitats supporting qualifying species.
	Noise and vibration	500m	During construction there would be changes to noise and visual stimuli generated by movement of plant and personnel within the construction area, excavation and other groundworks, and transport. Anthropogenic noise and visual changes could result in disturbance effects on sensitive species, resulting in both behavioural and population changes.
	Increased light levels	450m	Sensitive species (e.g. Barbastelle bats) could be disturbed / displaced from areas artificially lit by construction/security lighting causing disturbance during construction works. This could have a significant effect on the SAC population by affecting main commuting or foraging corridors.

Table 6.2 Project effects during operation for sensitive receptor groups, Screening categories (as applied in the matrices) and maximum anticipated potential direct effect ranges

Receptor group	Screening category	Effect range	Discussion
Operation and maintenance			
Subtidal and intertidal benthic ecology	Physical loss/ disturbance	Within the Scoping Boundary	Impacts are likely to be similar to those resulting from construction, but the magnitude will be less. For example, the presence of jack-up vessels during maintenance may disturb the substrate. There is the potential for long-term habitat loss at and around manmade structures, and at any subsea cables where secondary cable protection is installed.
	Suspended sediment and deposition	32km	Temporary increases in suspended sediment concentrations (and associated sediment deposition) could arise during maintenance activities (e.g. cable works) or scour around structures (WTG or cables) could affect local benthic or intertidal communities. Sediment mobilisation during operation and maintenance activities would be localised and intermittent in nature.
	Pollution	Within 500m of the Scoping Boundary	There is a risk of pollution being accidentally released from vessels and machinery during maintenance activities, as well as from project infrastructure. The disturbance of contaminated

Receptor group	Screening category	Effect range	Discussion
			sediment could affect the sediment and water quality. Potential implications for benthic or intertidal ecology include impaired biological function, mortality and lowered resilience to other environmental stressors. Rampion 2 has limited potential for significant contamination events. Should any occur, these are expected to be small-scale, short-lived and subject to significant dilution and dispersion in the open coastal environment. Effects would be reduced to *de minimis* levels within the immediate vicinity of the Scoping Boundary.
	Changes to physical processes	Within the study area for waves and hydrodynamics based on the spatial extent of potential impact on waves at adjacent coastlines (between Beachy Head and Selsey Bill) (see **Section 5.2.4** of the Scoping Report	Manmade structures such as scour protection and foundations may result in localised changes in hydrodynamics and wave regimes, with a potential effect on sediment transport pathways and associated effects on benthic and intertidal ecology. This may affect some benthic organisms as water flows may be reduced and therefore reducing the amount of suspended food particles which may inhibit feeding and growth. Alternatively, increased flows and scour may make the habitat less suitable for some species.
	INNS	To be assessed on a case by case basis and with reference to potential vectors and control measures.	Man-made structures placed on the seabed such as foundations and scour/cable protection are expected to be colonised by a range of

Receptor group	Screening category	Effect range	Discussion
			marine organisms leading to localised changes in biodiversity. Structures may also act as a refuge for fish and may facilitate the spread of non-native species. Maintenance vessels attending the site may also present introductory pathways.
	EMF	Within the Scoping Boundary	The effects of EMF could include reduced abundances, settlement and species richness, the disrupted navigation and behaviour of benthic organisms, particularly in areas where rock dumping or mattresses are used (at cable crossings or areas of hard substrate) and there is potential for smaller species to encounter strong magnetic fields. The source of EMF is the cable(s). Only benthic species close to the source (i.e. within the offshore components of the Scoping Boundary) are considered likely to be exposed.
Marine mammals	Underwater noise	Localised to individual WTGs and vessels	Increased underwater noise resulting from operational WTGs and increased vessel activity required for operation and maintenance operations may result in disturbance of marine mammal receptors. It should be noted that the noise and associated impacts within the operational phase will be substantially lower than construction in terms of magnitude.

Receptor group	Screening category	Effect range	Discussion
	Vessel disturbance	Along the transit route from port and within the offshore components of the Scoping Boundary	Potential for the presence of maintenance vessels to result in disturbance.
	Physical loss/ disturbance	Within the Scoping Boundary	The footprint/ presence of structures (i.e. WTGs, substations, possible scour protection and cable protection) will result in a long-term habitat loss for marine mammals and prey species.
	Collision	Along the transit route from port and within the offshore components of the Scoping Boundary	On-going vessel traffic during operation and maintenance may result in an increased collision risk to marine mammals.
	Pollution	Within the Scoping Boundary	There is a risk of pollution being accidentally released from vessels and machinery used by the project, as well as from project infrastructure. Pollution can affect sediment and water quality with potential subsequent implications for marine mammals and their prey.
	Effects on prey	Within the Scoping Boundary	Potential for a loss of prey resources for marine mammals as a result of changes in fish communities from operation and maintenance activities.
	EMF	Within the Scoping Boundary	EMF may be emitted from the submarine circuits into the water column during operation resulting in increased EMF exposures and behavioural responses (such as attraction to electromagnetic fields). Marine mammals (and

Receptor group	Screening category	Effect range	Discussion
			some species of fish) can detect magnetic fields can detect electric fields, although there is little to no imperial evidence that they present a significant threat.
Offshore ornithology	Disturbance /displacement	Intertidal: 0.5 km Offshore: 4 km	Advice from Statutory Nature Conservation Bodies (SNCBs, 2017)
	Indirect impacts through effects on prey species	Within the Scoping Boundary	Potential for a loss of prey resources as a result of changes in fish communities from operation and maintenance activities.
	Collision	Requires bird to fly across the rotor swept area	Only occurs in rotor swept area
	Barrier effect	Requires the bird to seek to fly across site of OWF	Only occurs in array area
Intertidal ornithology	Long-term habitat loss	Within the Scoping Boundary (onshore component)	The onshore substation will reduce the area of habitat available for qualifying mobile species, such as Annex I birds, that may utilise the habitat outside of Europeans sites.
	Intermittent temporary habitat loss	Within the Scoping Boundary	Operation and maintenance activities could lead to temporary habitat loss, damage, disturbance, fragmentation and / or severance that qualifying mobile species, such as Annex I birds or Annex

Receptor group	Screening category	Effect range	Discussion
			II species could utilise outside of Europeans sites.
	Intermittent temporary disturbance to habitats and or species	Within the Scoping Boundary	Qualifying mobile species, such as Annex I birds e.g. wintering wader species feeding on inland fields at high tide, could potentially enter or cross the project boundary and be disturbed by the operation and maintenance activities.
	Pollution	Within 500m of the Scoping Boundary	Qualifying mobile species, such as Annex I birds could potentially be affected by an accidental release of contaminants if they utilise areas within Awel y Mor outside of Europeans sites.
Migratory fish (and prey species for qualifying species)	Suspended sediment and deposition	32km	A temporary increase in suspended sediment concentrations and associated sediment deposition may arise during maintenance activities (e.g. cable works) or scour. Potential for direct effects (e.g. navigation) or indirect (via food sources). However, the potential for sediment disturbance will be much reduced when compared to the construction phase.
	Underwater noise	Localised to individual WTGs and vessels	Increased underwater noise resulting from operational WTGs and increased vessel activity required for operation and maintenance operations may result in disturbance of fish receptors. It should be noted that the noise and associated impacts within the operational

Receptor group	Screening category	Effect range	Discussion
			phase will be substantially lower than construction in terms of magnitude
	Pollution	Within 500m of the Scoping Boundary	There is a risk of pollution being accidentally released from vessels and machinery used by the project, as well as from project infrastructure. Pollution can affect sediment and water quality with potential subsequent implications for migratory fish.
	Changes to physical processes	32km	Man-made structures placed on the seabed such as foundations and scour/cable protection have the potential to bring about localised changes in hydrodynamics and wave regimes, with a potential effect on sediment transport pathways. This could impact migratory fish receptors.
	INNS	To be assessed on a case by case basis and with reference to potential vectors and control measures.	Man-made structures placed on the seabed such as foundations and scour/cable protection will be colonised by a range of marine species, potentially including migratory fish or their prey. Structures may form the role of artificial fish but also facilitate the spread of non-native species.
Terrestrial ecology	Changes in hydrology	Within 500 m of the onshore Scoping Boundary and reviewed on a case-by-case basis with reference to the potential source of hydrological	Changes to ground conditions and drainage could arise during ground works (e.g. excavations and/or trenching) associated with site access maintenance works or inspections

Receptor group	Screening category	Effect range	Discussion
		interference and the location of potential receptors (GWDH) within the catchment.	or repairs. The potential impacts within the operational phase would be substantially lower than construction in terms of magnitude.
	Pollution events	Within 500m of the Scoping Boundary	
	Emissions to air	200m from the roadside of access routes (including public highway)	
	INNS	To be assessed on a case by case basis and with reference to potential vectors and control measures.	
	Land take / land cover change	To be assessed on a case by case basis and with reference to potential vectors and control measures.	
	Fragmentation of habitats	Within the Scoping Boundary	
	Noise and vibration	To be assessed on a case by case basis with reference to the distribution of supporting habitat.	
	Increased light levels	500m	

7. Summary of results

The results of the Screening exercise for Likely Significant Effects is provided in this section.

7.1.1 A summary of the European sites (and relevant features) for which the potential for LSE could not be discounted during Screening is provided in **Table 7.1** and **Table 7.2** for the construction and operation and maintenance phases, respectively. The full Screening is reported in the Screening matrices (**Appendix A**).

7.1.2 At the conclusion of the Screening exercise, LSE could not be discounted on current information for 38 European sites. For 19 of these sites, it was determined that Rampion 2 acting alone could result in LSEs. For the other 19 designations, LSE cannot be discounted with respect to Rampion 2 acting in-combination with external plans or projects

7.1.3 The European sites for which LSE cannot be discounted are as follows (bold highlight indicates where the site was identified for potential LSEI):

1. River Itchen SAC
2. Arun Valley (UK) Ramsar
3. Arun Valley (UK) SPA
4. The Mens (UK) SAC
5. Solent Maritime (UK) SAC
6. South Wight Maritime (UK) SAC
7. Solent and Isle of Wight lagoons SAC
8. Solent and Dorest Coast (UK) SPA
9. Pagham Harbour (UK) SPA
10. Pagham Harbour (UK) Ramsar
11. Chichester and Langstone Harbours (UK) SPA
12. Chichester and Langstone Harbours (UK) Ramsar
13. Solent and Southampton Water (UK) SPA
14. Solent and Southampton Water (UK) Ramsar
15. Dungeness, Romney Marsh and Rye Bay (UK) SPA
16. Littoral seino-marin (FR) SPA
17. Falaise du Bessin Occidental (FR) SPA
18. Côte de Granit Rose-Sept Iles (FR) SPA
19. Alderney West Coast and the Burhou Islands (UK) Ramsar
20. Alde-Ore Estuary (UK) SPA

21. Alde-Ore Estuary (UK) Ramsar
22. Flamborough and Filey Coast (UK) SPA
23. Northumbria coast (UK) SPA
24. Northumbria coast (UK) Ramsar
25. Northumberland marine (UK) SPA
26. Coquet Island (UK) SPA
27. Farnes Isles (UK) SPA
28. Medway Estuary and Marshes SPA (UK) SPA
29. Medway Estuary and Marshes Ramsar
30. Foulness (Mid-Essex Coast Phase 5) (UK) SPA
31. Foulness (Mid-Essex Coast Phase 5) (UK) Ramsar
32. The Wash (UK) SPA
33. The Wash (UK) Ramsar
34. Breydon Water (UK) SPA
35. Breydon Water (UK Ramsar
36. Greater Wash (UK) SPA
37. North Norfolk Coast (UK) SPA
38. North Norfolk Coast Ramsar

Table 7.1 Consideration of Likely Significant Effects - summary of conclusions for construction phase of Rampion 2.

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 0	River Itchen SAC 50.5 km to the mouth of the Southampton Water (the estuary connecting the River Itchen to the marine environment)	Atlantic salmon	Underwater noise	The risk of exposure to noise and vibration during construction is expected to be low and limited to passing migratory fish undertaking large migrations. The potential localised disturbance of or injury to some individuals is not considered likely to have any measurable effect on population status, or migratory behaviour on fish accessing the River Itchen via Southampton Water. However, as the extent of the ZoI for underwater noise has not been quantified, effects cannot be quantified, and LSE is not excluded at this stage for effects both alone and in-combination.	**Potential for LSE**, consider at Appropriate Assessment
			Suspended sediment Effects on prey Accidental pollution Physical habitat loss Habitat disturbance	The direct exposure of individuals from the SAC population to these effects is possible, although limited to passing fish on migration. The rate of exposure and the severity and duration of the effects experienced locally are considered to be low. Further in view of the dispersion capacity of the open coast environment, and the distance over which these features disperse in that environment, no interactions or pathways to significant impacts are identified. It is determined that impacts related to these effects would be *de*	**No LSE, alone or in-combination.**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				minimis to the extent impacts would not amount to a discernible contribution to significant effects in-combination.	
Matrix 1	Arun Valley (UK) Ramsar 2.8km from onshore component of the Scoping Boundary	Various wetland invertebrates Various rare and scare plant species Diverse and rich ditch flora	Changes in hydrology Pollution events Emissions to air INNS Land take / land coverage change Fragmentation of habitats Increased light In-combination effects	This Ramsar site is not within the ZoI associated with changes associated with these effect categories. Given the geographic separation between any project infrastructure and the site boundary and as these features are restricted in mobility, no pathways to significant effects are identified either alone, or in-combination.	**No LSE, alone or in-combination.**
		Assemblage of wintering waterfowl	Changes in hydrology	Changes in hydrology could occur up to 1km from the Scoping Boundary due to construction activities and the presence of buried infrastructure. Although the area that	**Potential for LSE**, consider at

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
		Northern pintail		may be affected is outside of the Arun Valley Ramsar site, designated waterfowl could use parts of it for foraging (i.e. it is functionally linked land). Changes in hydrology could alter the suitability of certain habitat types for foraging both alone and in-combination.	Appropriate Assessment
			Noise and vibration	Construction and decommissioning activities will result in increases in noise and vibration across functionally linked land of the ornithological features of the Arun Valley Ramsar site. This could potentially result in the disturbance and displacement of foraging individuals both alone and in-combination.	**Potential for LSE**, consider at Appropriate Assessment
			Fragmentation of habitats	Construction and decommissioning activities may result in the fragmentation of foraging habitats within areas of functionally linked land.	**Potential for LSE**, consider at Appropriate Assessment
			Pollution events Emissions to air INNS Land take / land coverage change Increased light	Although functionally linked land accessed by waterfowl could be affected by these changes caused by these effects, the pathways to significant effects are considered weak. Affected areas would be highly localised and small in extent and would represent only a small fraction of available foraging habitat	**No LSE, alone**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				within the Arun Valley. LSE are not anticipated for these effects acting alone.	
			Pollution events Emissions to air INNS Land take / land cover change Increased light	Whilst these effects are non-significant alone, the magnitude of the potential effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for the Rampion 2 acting alone, which could amount to LSE-in-combination.	**Potential for LSEI**, pending further information.
Matrix 2	Arun Valley (UK) SPA (2.8km from onshore component of the Scoping Boundary	Bewick's swan Non-breeding water fowl assemblage including shoveler, teal, wigeon and Bewick's swan.	Changes in hydrology	Changes in hydrology could occur up to 1km from the Scoping Boundary due to construction activities and the presence of buried infrastructure. Although the area that may be affected is outside of the Arun Valley SPA, Bewick's swan and the non-breeding waterfowl assemblage could use parts of it for foraging (i.e. it is functionally linked land). Changes in hydrology could alter the suitability of certain habitat types for foraging, both alone and in-combination.	**Potential for LSE**, consider at Appropriate Assessment
			Noise and vibration	Construction and decommissioning activities would result in increases in noise and vibration across functionally linked land of the designated features of the Arun Valley SPA. This could potentially result in the disturbance	**Potential for LSE**, consider at Appropriate Assessment

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				and displacement of foraging individuals, both alone and in-combination.	
			Fragmentation or severance of habitats	Habitats that may be used by Bewick's swan and the water fowl assemblage from the Arun Valley for foraging are present within the Scoping Boundary. The activities during the construction could fragment the habitat resulting in displacement of foraging individuals both alone and in-combination.	**Potential for LSE**, consider at Appropriate Assessment
			Pollution events Emissions to air INNS Land take / land coverage change Increased light	Although functionally linked land accessed by waterfowl could be affected by these changes caused by these effects, the pathways to significant effects are considered weak. Affected areas would be highly localised and small in extent and would represent only a small fraction of available foraging habitat within the Arun Valley. LSE are not anticipated for these effects acting alone.	**No LSE, alone**
			Pollution events Emissions to air INNS Land take / land coverage change Increased light	Whilst these effects are non-significant alone, the magnitude of the potential effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for the Rampion 2 acting alone, which could amount to LSE-in-combination.	**Potential for LSEI**, pending further information.

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 3	Arun Valley (UK) SAC (2.8 km from Onshore cable corridor)	Ramshorn snail	Changes in hydrology Pollution events Emissions to air INNS Land take / land coverage change	The Arun Valley SAC is not within the ZoI associated with the potential changes caused by these effects and therefore, Rampion 2 would not contribute towards effects on the Arun Valley SAC, alone or in-combination.	**No LSE, alone or in-combination.**
Matrix 4	The Mens (UK) SAC (11km from Onshore cable corridor)	Barbastelle bat	Changes in hydrology Pollution events Emissions to air INNS Land take / land coverage change Noise and vibration	The ZoI associated with these effects during construction or decommissioning would not overlap with the SAC, therefore no direct effects on the site are predicted. Potential changes to foraging habitat for barbastelle resulting in LSE is discounted due to the wide range of habitats favoured (e.g. riparian zones, woodlands, hedgerow, field margins etc. (Zeal, Davidson-Watts and Jones, 2012), including those that are not GWDTE. Although functionally linked land could be affected, the areas would be highly localised and small in extent and would represent only a small fraction of available foraging habitat for barbastelle in the area and would be towards the limits of their typical foraging range. Otherwise, effects would be temporary and limited ensuring that the extent of the effect will be low, temporary and reversible.	**No LSE, alone**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				LSE are not anticipated for these effects acting alone	
			Changes in hydrology Pollution events Emissions to air INNS Land take / land coverage change Noise and vibration	Whilst these effects are non-significant alone, the magnitude of the potential effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for the Rampion 2 acting alone, which could amount to LSE-in-combination.	**Potential for LSEI**, pending further information.
			Fragmentation or severance of habitats	The Mens SAC is within foraging range of areas that may be subject to construction and decommissioning activities; within this area are habitats that barbastelle from the SAC could forage across; these are therefore assumed to be functionally linked and could be fragmented by the works, alone and in-combination.	**Potential for LSE**, consider at Appropriate Assessment
			Increased light levels	Barbastelle are sensitive to lighting and could potentially forage across the areas that may require to be lit for construction and decommissioning purposes, leading to displacement, alone and in-combination.	**Potential for LSE**, consider at Appropriate Assessment

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 5	Duncton to Bignor Escarpment (UK) SAC (6.5km from Onshore cable corridor)	*Asperulo-Fagetum* beech forests	Changes in hydrology Pollution events INNS Land take / land coverage change	The SAC is not within the ZoI associated with the potential changes caused by these effects and therefore, Rampion 2 would not contribute towards effects on the SAC, either alone or in-combination.	**No LSE, alone or in-combination.**
			Emissions to air	The Duncton to Bignor Escarpment SAC is not within 200m of the Scoping Boundary and is therefore is outside the Zone of Influence for emissions associated with vehicles or plant installing, maintaining or decommissioning the proposed infrastructure. Roads within 200m of the SAC include the A285, however this is unlikely to carry construction traffic as it is a route into Chichester town centre. Even should small amounts of construction traffic access these roads the emissions can be discounted as the increase in traffic will be temporary and limited ensuring that the extent of the effect will be low, temporary and reversible, and LSE is not anticipated either alone or in-combination.	**No LSE, alone or in-combination**
Matrix 6 & 7	Pagham Harbour (UK) SPA and Ramsar	Dark-bellied Brent goose	Changes in hydrology Pollution events Emissions to air	This Ramsar site is not within the ZoI for any direct effect pathways related to these effects. Functionally linked land for dark-bellied Brent geese of the Pagham Harbour	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	(onshore only) (9.2km from Onshore cable corridor)		INNS Land take / land coverage change Fragmentation or severance of habitats Noise and vibration Increased light levels	Ramsar site is unlikely to be affected as the Scoping Boundary is at the edge of their foraging range, and any infrastructure is likely to be, at least several hundred metres, further away from the Ramsar site boundary. Therefore, no LSE is anticipated to arise either alone, or in-combination.	
Matrix 8	Solent Maritime (UK) SAC (15.7km to Array)	Estuaries Spartina swards Atlantic salt meadows Sandbanks which are slightly covered by sea water all the time Mudflats and sandflats not covered by	Suspended sediment and deposition	The habitats and communities associated with these features are sensitive to sediment deposition and changes to the sedimentary regime. Sediment plumes would be transient and, noting the distance of this site from the source of sediment disturbances, levels are not expected to exceed background suspended sediment concentrations typical in estuaries and significant impacts are not envisaged. LSE cannot be discounted, however, without further information to clarify the likely range of the sediment plume and subsequent disposition rates on the intertidal areas of this site, alone and in-combination.	**Potential for LSE**, pending further information.
			INNS	The risk to this site is considered to be low due to incidental legislative controls concerning the introduction and spread of INNS. A number of measures and best	**Potential for LSE**, consider at

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
		seawater at low tide Coastal lagoons Salicornia and other annuals colonizing mud and sand		practice approaches will be implemented to reduce the potential risk and consequences of INNS introduction and spread. This pathway will be considered at Stage 2 of the HRA due to the application of mitigation to ensure compliance with Sweetman.	Appropriate Assessment.
			Physical habitat loss and disturbance	As there is no direct physical overlap with the Scoping Boundary, there is no potential for direct physical disturbance to features, either alone or in-combination.	**No LSE, alone or in-combination**
			Pollution	Rampion 2 has very low potential to generate emissions to the marine environment during the construction activities proposed. Further applying professional judgement about the nature of the receiving environment, it is anticipated that contamination would be subject to significant dilution and quickly dissipated to non-harmful levels in the open coastal environment over this distance (15.7km) and significant effect would not arise either alone or in-combination.	**No LSE, alone or in-combination**
Matrix 9	South Wight Maritime (UK) SAC 20.5 km to Array	Reefs Vegetated sea cliffs of the Atlantic	Suspended sediment and deposition	The habitats and communities associated with these features are sensitive to sediment deposition and changes to the sedimentary regime. Sediment plumes would be transient and, noting the distance of this site from the	**Potential for LSE**, pending further information

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
		and Baltic Coasts Submerged or partially submerged sea caves		source of sediment disturbances, levels are not expected to exceed background suspended sediment concentrations typical in estuaries and significant impacts are not envisaged. LSE cannot be discounted, however, without further information to clarify the likely range of the sediment plume and subsequent disposition rates on the intertidal areas of this site, alone and in-combination.	
			INNS	The risk to this site is considered to be low due to incidental legislative controls concerning the introduction and spread of INNS. A number of measures and best practice approaches will be implemented to reduce the potential risk and consequences of INNS introduction and spread. This pathway will be considered at Stage 2 of the HRA due to the application of mitigation to ensure compliance with Sweetman.	**Potential for LSE**, consider at Appropriate Assessment
			Physical habitat loss and disturbance	As there is no direct physical overlap with the Scoping Boundary, there is no potential for direct physical disturbance to features, either alone or in-combination.	**No LSE, alone or in-combination**
			Pollution	Rampion 2 has very low potential to generate emissions to the marine environment during the construction activities proposed. Further	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				applying professional judgement about the nature of the receiving environment, it is anticipated that contamination would be subject to significant dilution and quickly dissipated to non-harmful levels in the open coastal environment over this distance (15.7km) and significant effect would not arise either alone or in-combination.	
Matrix 9A	Solent and Isle of Wight lagoons SAC (UK) (30.0 km to Array)	Costal lagoons* priority feature	Suspended sediment and deposition	The habitats and communities associated with these features are sensitive to sediment deposition and changes to the sedimentary regime. Sediment plumes would be transient and, noting the distance of this site from the source of sediment disturbances, levels are not expected to exceed background suspended sediment concentrations typical in estuaries and significant impacts are not envisaged. LSE cannot be discounted, however, without further information to clarify the likely range of the sediment plume and subsequent disposition rates on the intertidal areas of this site, alone and in-combination.	**Potential for LSE**, pending further information
			INNS	The risk to this site is considered to be low due to incidental legislative controls concerning the introduction and spread of INNS. A number of measures and best practice approaches will be implemented to	**Potential for LSE**, consider at Appropriate Assessment

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				reduce the potential risk and consequences of INNS introduction and spread. This pathway will be considered at Stage 2 of the HRA due to the application of mitigation to ensure compliance with Sweetman.	
			Physical habitat loss and disturbance	As there is no direct physical overlap with the Scoping Boundary, there is no potential for direct physical disturbance to features, either alone or in-combination.	**No LSE, alone or in-combination**
			Pollution	Rampion 2 has very low potential to generate emissions to the marine environment during the construction activities proposed. Further applying professional judgement about the nature of the receiving environment, it is anticipated that contamination would be subject to significant dilution and quickly dissipated to non-harmful levels in the open coastal environment over this distance (15.7km) and significant effect would not arise either alone or in-combination.	**No LSE, alone or in-combination**
Matrix 10	Littoral Cauchois (FR) SAC (94.4km to Array)	Grey seal	Underwater noise	Evidence indicates grey seal at sea density in the immediate vicinity of Rampion 2 is low. E.g. Russell et al., 2017 (Updated Seal Usage Maps) present raw tagging and haul out data that indicate no usage of the English Channel by grey seal. There are no important	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				habitats (e.g. haul-outs or breeding sites) within the ZoI of Rampion 2. While connectivity between Rampion 2 and this SAC is possible (via effects on a small number of individuals that enter the Zone of Influence), the significance of effects at population level to this SAC population is considered to decrease to non-significant levels with distance and no LSE is concluded on this basis, and the low risk of exposure. Project-related impacts to species from this site (over 90 km from the Scoping Boundary) would be *de minimis* to the extent impacts would not amount to a discernible contribution to adverse effects in-combination.	
			Underwater noise Vessel disturbance Audio / visual disturbance (above surface) Collision risk Effects on prey Pollution Suspended sediment EMF	For these categories, the severity of the effect experienced locally is considered to be small to negligible. Significant effects would not therefore manifest on the population of this distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context, either alone or in-combination.	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
		Sea lamprey Twait shad	Underwater noise Effects on prey Pollution Suspended sediment EMF	Given the anticipated extent of physical effects associated with the construction of Rampion 2, and the lack of conceivable barriers to migration, it is considered that there is no potential for significant effect on migratory fish, or key habitats, either alone or in-combination.	**No LSE, alone or in-combination**
Matrix 11	Southern North Sea (UK) SAC (127.7km to Array)	Harbour porpoise	Underwater noise	Drawing on literature provided for the assessment of SAC marine mammals (i.e. JNCC and Natural England, 2020), the range applied to the Screening assessment, within which significant effects from underwear noise might occur, is 26km. This value (range) encompasses risk of injury (onset of Permanent Threshold Shift) and extends to address risk of habitat loss due to underwater noise driven disturbance. As this SAC does not fall within that range it is determined there is no potential for LSE from Rampion 2, either alone or in-combination.	**No LSE, alone or in-combination**
			Vessel disturbance Collision risk Effects on prey Pollution Suspended sediment	The significance of effects at population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low to negligible. Effects would not therefore manifest on this	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
			Physical habitat loss and disturbance EMF	distant SAC after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.	
Matrix 12	23 transboundary sites within the NS MU (Between 101km and 1131km from the Array)	Harbour porpoise	Underwater noise	Drawing on literature associated with the Southern North Sea SAC/SCI e.g. (JNCC, 2015), the range applied to the Screening assessment, within which significant effects from underwear noise might occur, is 26 km. This value (range) encompasses risk of injury (onset of Permanent Threshold Shift) and extends to address risk of habitat loss due to underwater noise driven disturbance. As this SAC does not fall within that range it is determined there is no potential for LSE from Rampion 2, either alone or in-combination.	**No LSE, alone or in-combination**
			Vessel disturbance Collision risk Effects on prey Pollution Suspended sediment Physical habitat loss and disturbance EMF	Each SAC is located over 100 km from the Array and Offshore cable corridor and well outside the project's Zone of Influence. Direct effects would not result to harbour porpoise when present within their respective SACs. Due to the mobility of cetaceans, however, impacts could manifest on individuals associated with this SAC population that have left the confines of their host site and are present within the project‘s sphere of	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				influence. It is assumed that all SACs with potential connectivitity to the species known within the effect footprint of Rampion 2 have the theoretical potential to be affected. However, the likelihood that a feature from this SAC is a) present within project's effect footprint and b) the significance of effects to this SAC at population level are considered to decrease with a) distance, b) the severity of the effect experienced locally and c) apportionment to the other SACs within the species range. For this pathway, the severity of the effect experienced locally is considered to be low to negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance, either alone or in-combination.	
Matrix 13	16 transboundary sites (Between 101km and 1131km from the Array)	Bottlenose dolphin	Underwater noise Vessel disturbance Collision risk Effects on prey Pollution Suspended sediment Physical habitat loss and disturbance	The broadscale marine mammal data available clearly shows that the eastern English Channel (east of the Isle of Wight to Dungeness) typically holds a relatively low density and diversity of cetacean species. While connectivity between Rampion 2 and these SACs is possible (via effects on a small number of individuals that enter the Zone of Influence), the significance of effects at population level to this SAC population is	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
			EMF	considered to decrease to non-significant levels with distance and no LSE is concluded on this basis and the low risk of exposure. Project-related impacts to species from these sites (all over 100 km from the Scoping Boundary) would be small to the extent impacts would not amount to a discernible contribution to significant effects, alone or in-combination.	
Matrix 14	15 transboundary sites (Between 74km and 136km to Array)	Grey seal	Underwater noise Vessel disturbance Audio / visual disturbance (above surface) Collision risk Effects on prey Pollution Suspended sediment EMF	Evidence indicates grey seal at sea density in the immediate vicinity of Rampion 2 is low. E.g. Russell et al., 2017 (Updated Seal Usage Maps) present raw tagging and haul out data that indicate no usage of the English Channel by grey seal. There are no important habitats (e.g. haul-outs or breeding sites) within the Zone of Influence of Rampion 2. While connectivity between Rampion 2 and this SAC is possible (via effects on a small number of individuals that enter the Zone of Influence), the significance of effects at population level to this SAC population is considered to decrease to non-significant levels with distance and no LSE is concluded on this basis and the low risk of exposure. Project-related impacts to species from this site (over 90 km from the Scoping Boundary) would be *de minimis* to the extent impacts	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				would not amount to a discernible contribution to adverse effects in-combination.	
Matrix 15	8 transboundary sites (Between 74km and 115km from the Array)	Harbour seal	Underwater noise Vessel disturbance Audio / visual disturbance (above surface) Collision risk Effects on prey Pollution Suspended sediment EMF	Evidence indicates that harbour seal at sea density in the immediate vicinity of Rampion 2 is low, with some usage by harbour seal around the Solent and surrounding harbours (Russell *et al.,* 2017). Mean at sea usage (modelled) for harbour seals across the Rampion 2 study area is 0<1 animal/km2. Crucially, harbour seal tagging in French waters appears to show no connectivity to the UK (Vincent *et al.,* 2017). As there are no SACs with foraging range for this species on the south England coast, the prospect of connectivity and significance effects on the population of these transboundary SACs (all over 73 km from the Scoping Boundary) is discounted. While connectivity between Rampion 2 and this SAC is theoretically possible (via effects on a small number of individuals that enter the Zone of Influence), the significance of effects at population level is further considered to decrease to non-significant levels with distance and the low risk of exposure (small numbers of animals present within the Zone of Influence). No LSE is concluded on this basis. Project-related	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				impacts to species from this site (over 90 km from the Scoping Boundary) would be de minimis to the extent impacts would not amount to a discernible contribution to adverse effects in-combination.	
Matrix 16	Solent and Dorset Coast (UK) SPA (0.63 km from Offshore cable corridor) (13 km to Array)	Common tern Little tern Sandwich tern	Changes in prey availability and behaviour	Based on the proximity of the Array to the breeding colony and the number of foraging trips required by terns per day during the chick rearing period (Masden *et al.,* 2010), LSE cannot be discounted at this stage for Rampion acting both alone and in-combination.	**Potential for LSE**, consider at Appropriate Assessment
			Disturbance / displacement	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.,* 2019). Therefore, LSE from Rampion 2 acting both alone and in-combination can be discounted in relation to this pathway.	**No LSE, alone or in-combination**
Matrix 17 & 18	Pagham Harbour (UK) SPA and Ramsar (offshore)	Common tern	Changes in prey availability and behaviour	Based on proximity and species sensitivity, LSE cannot be discounted on current information for Rampion acting both alone and in-combination.	**Potential for LSE**, consider at Appropriate Assessment

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	(9.2 km from Offshore cable corridor) (13.5 km to Array)		Disturbance / displacement	This species has very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.,* 2019). Therefore, LSE from Rampion 2 acting both alone and in-combination can be discounted in relation to this pathway.	**No LSE, alone or in-combination**
Matrix 19 & 20	Chichester and Langstone Harbours (UK) SPA and Ramsar (15.6 km from Offshore cable corridor) (22.3 km to Array)	Common tern Sandwich tern	Changes in prey availability and behaviour	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms supports a finding of no LSE for Rampion 2 acting alone or in-combination.	**No LSE, alone or in-combination**
			Disturbance / displacement	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al*. 2019). Therefore, LSE can be discounted for Rampion 2 acting alone or in-combination.	**No LSE, alone or in-combination**
Matrix 21 & 22	Solent and Southampton	Sandwich tern	Changes in prey availability and behaviour	The pathway to effects due to insufficient prey resource is weak for this highly mobile receptor. Temporary and low-impact effects	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	Water (UK) SPA and Ramsar (28.3 km to Array)			are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms supports a finding of no LSE for Rampion 2 acting alone or in-combination.	
			Disturbance / displacement	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.,* 2019). Therefore, LSE can be discounted in relation to effects both alone and in-combination.	**No LSE, alone or in-combination**
Matrix 23	Dungeness, Romney Marsh and Rye Bay (UK) SPA (36.1km to Array)	Common tern Sandwich tern	Changes in prey availability and behaviour	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors, this distance from the SPA, as only temporary and low-impact effects are anticipated for local fish and benthic ecology. It is considered there would be sufficient alternative resource available to support the species population and previous experience of other offshore wind farms supports a finding of no LSE. LSE is discounted in relation to effects acting both alone and in-combination.	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
			Disturbance / displacement	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.,* 2019). Therefore, LSE can be discounted in relation to effects both alone and in-combination.	**No LSE, alone or in-combination**
Matrix 24	Littoral seino-marin (FR) SPA (72.2km to Array)	Fulmar Kittiwake Lesser black-backed gull Great black-backed gull	Changes in prey availability and behaviour	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors, this distance from the SPA, as only temporary and low-impact effects are anticipated for local fish and benthic ecology. It is considered there would be sufficient alternative resource available to support the species population and previous experience of other offshore wind farms supports a finding of no LSE. LSE is discounted in relation to effects acting both alone and in-combination.	**No LSE, alone or in-combination**
			Disturbance / displacement	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.,* 2019). Therefore, LSE can be discounted in relation to effects both alone and in-combination.	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 25 & 26	Medway Estuary and Marshes (UK) SPA and Ramsar (91.5km to Array)	Common tern	Changes in prey availability and behaviour	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors, this distance from the SPA, as only temporary and low-impact effects are anticipated for local fish and benthic ecology. It is considered there would be sufficient alternative resource available to support the species population and previous experience of other offshore wind farms supports a finding of no LSE. LSE is discounted in relation to effects acting both alone and in-combination.	**No LSE, alone or in-combination**
			Disturbance / displacement	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.,* 2019). Therefore, LSE can be discounted in relation to effects both alone and in-combination.	**No LSE, alone**
			Disturbance / displacement		
Matrix 27	Outer Thames Estuary (UK) SPA (103.5km to Array)	Common tern	Changes in prey availability and behaviour	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors, this distance from the SPA, as only temporary and low-impact effects are anticipated for local fish and benthic ecology.	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				It is considered there would be sufficient alternative resource available to support the species population and previous experience of other offshore wind farms supports a finding of no LSE. LSE is discounted in relation to effects acting both alone and in-combination.	
			Disturbance / displacement	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.*, 2019). Therefore, LSE can be discounted in relation to effects both alone and in-combination.	**No LSE, alone or in-combination**
Matrix 28 & 29	Foulness (Mid-Essex Coast Phase 5) (UK) SPA and Ramsar (109.9km to Array)	Common tern Sandwich tern	Changes in prey availability and behaviour	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors, this distance from the SPA, as only temporary and low-impact effects are anticipated for local fish and benthic ecology. It is considered there would be sufficient alternative resource available to support the species population and previous experience of other offshore wind farms supports a finding of no LSE. LSE is discounted in relation to effects acting both alone and in-combination.	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
			Disturbance / displacement	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.,* 2019). Therefore, LSE can be discounted in relation to effects both alone and in-combination.	**No LSE, alone or in-combination**
Matrix 30	Falaise du Bessin Occidental (FR) SPA (132.6 km to Array)	Fulmar	Changes in prey availability and behaviour	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors, this distance from the SPA, as only temporary and low-impact effects are anticipated for local fish and benthic ecology. It is considered there would be sufficient alternative resource available to support the species population and previous experience of other offshore wind farms supports a finding of no LSE. LSE is discounted in relation to effects acting both alone and in-combination.	**No LSE, alone or in-combination**
			Disturbance / displacement	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.,* 2019). Therefore, LSE can be discounted in relation to effects both alone and in-combination.	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
		Kittiwake	Changes in prey availability and behaviour	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors, this distance from the SPA, as only temporary and low-impact effects are anticipated for local fish and benthic ecology. It is considered there would be sufficient alternative resource available to support the species population and previous experience of other offshore wind farms supports a finding of no LSE. LSE is discounted in relation to effects acting both alone and in-combination.	**No LSE, alone or in-combination**
			Disturbance / displacement	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.,* 2019). Therefore, LSE can be discounted in relation to effects both alone and in-combination.	**No LSE, alone or in-combination**
Matrix 31 & 32	Alde-Ore Estuary (UK) SPA and Ramsar (181.5 km to Array)	Lesser black-backed gull	Changes in prey availability and behaviour	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors, this distance from the SPA, as only temporary and low-impact effects are anticipated for local fish and benthic ecology. It is considered there would be sufficient alternative resource available to support the species population and previous experience	**No LSE, alone**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				of other offshore wind farms supports a finding of no LSE. LSE is discounted in relation to effects acting both alone and in-combination.	
			Disturbance / displacement	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.,* 2019). Therefore, LSE can be discounted in relation to effects both alone and in-combination.	**No LSE, alone**
		Sandwich tern	Changes in prey availability and behaviour	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these effects the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the	**No LSE, alone or in-combination**
			Disturbance / displacement		

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				wider environmental context either alone, or in-combination.	
Matrix 33	Chausey (FR) SPA (188.4km to Array)	Gannet	Changes in prey availability and behaviour		**No LSE, alone or in-combination**
			Disturbance / displacement		
Matrix 34	Cap d'Erquy-Cap Fréhel (FR) SPA (228.6km to Array)	Fulmar	Changes in prey availability and behaviour	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors, this distance from the SPA, as only temporary and low-impact effects are anticipated for local fish and benthic ecology. It is considered there would be sufficient alternative resource available to support the species population and previous experience of other offshore wind farms supports a finding of no LSE. LSE is discounted in relation to effects acting both alone and in-combination.	**No LSE, alone or in-combination**
			Disturbance / displacement	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.,* 2019). Therefore, LSE can be discounted in	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				relation to this effect both alone and in-combination.	
Matrix 35 & 36	The Wash (UK) SPA and Ramsar (230km from Offshore cable corridor)	Common tern	Changes in prey availability and behaviour	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these effects the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination	**No LSE, alone or in-combination**
			Disturbance / displacement		**No LSE, alone or in-combination**
Matrix 37 and 38	Breydon Water (UK) SPA and Ramsar (239.3km to Array)	Common tern	Changes in prey availability and behaviour	Findings as above	**No LSE, alone or in-combination**
			Disturbance / displacement		

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 39	Tregor Goëlo (FR) SPA (244.7km to Array)	Fulmar	Changes in prey availability and behaviour	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. LSE is discounted in relation to effects acting both alone and in-combination. Previous experience of other offshore wind farms supports a finding of no LSE.	**No LSE, alone or in-combination**
			Disturbance / displacement	This species has very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.* 2019). Therefore, LSE can be discounted at this stage, alone and in-combination.	**No LSE, alone or in-combination**
Matrix 40	Greater Wash (UK) SPA (244.km from Offshore cable corridor)	Common tern Sandwich tern	Changes in prey availability and behaviour	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these effects the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is	**No LSE, alone or in-combination**
			Disturbance / displacement		

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.	
Matrix 41 & 42	North Norfolk Coast (UK) SPA and Ramsar (251.9km from Offshore cable corridor)	Common tern Sandwich tern	Changes in prey availability and behaviour Disturbance / displacement	Findings as above	**No LSE, alone or in-combination**
Matrix 43	Côte de Granit Rose-Sept Iles (FR) SPA (257.8km to Array)	Manx shearwater Fulmar European storm petrel	Changes in prey availability and behaviour	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. LSE is discounted in relation to effects acting both alone and in-combination. Previous experience of other offshore wind farms supports a finding of no LSE.	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
			Disturbance / displacement	This species has very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.* 2019). Therefore, LSE can be discounted at this stage, alone and in-combination.	**No LSE, alone or in-combination**
		Gannet	Changes in prey availability and behaviour	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. LSE is discounted in relation to effects acting alone	**No LSE, alone**
			Disturbance / displacement	This species has very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.* 2019). Therefore, LSE can be discounted for Rampion 2 acting alone.	**No LSE, alone**
			The above pathways, in-combination	The magnitude of the potential effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for the Rampion 2 acting alone, which could amount to LSE-in-combination.	**Potential for LSEI**, pending further information.

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 44	Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a moroedd Benfro (UK) SPA (310.8km from Offshore cable corridor)	Manx shearwater European storm petrel Puffin Lesser black-backed gull	Changes in prey availability and behaviour	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these effects the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.	**No LSE, alone or in-combination**
			Disturbance / displacement		**No LSE, alone or in-combination**
Matrix 45	Glannau Aberdaron and Ynys Enlli / Aberdaron Coast and Bardsey Island (UK) SPA (352.5km from Offshore cable corridor)	Manx shearwater	Changes in prey availability and behaviour	Findings as above for Rampion 2 acting alone	**No LSE, alone or in-combination**
			Disturbance / displacement		**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 46	Flamborough and Filey Coast (UK) SPA (366.5km from Offshore cable corridor)	Razorbill Fulmar Gannet Herring gull	Changes in prey availability and behaviour	Findings as above for Rampion 2 acting alone	**No LSE, alone or in-combination**
			Disturbance / displacement	Findings as above for Rampion 2 acting alone	**No LSE, alone or in-combination**
		Guillemot Razorbill	The above pathways, in-combination	The magnitude of the potential effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for the Rampion 2 acting alone, which could amount to LSE-in-combination.	**Potential for LSEI**, pending further information.
47 - 110	The following sites between 385km and 1104.5km from the Array: Ouessant-Molène (FR) SPA Camaret (FR) SPA Iles Houat-Hoëdic (FR) SPA Cap Sizun (FR) SPA Isles of Scilly (UK) SPA and Ramsar	Features considered as listed in **Table 5.7** and PINS matrices in **Appendix A**	Changes in prey availability and behaviour Direct disturbance / displacement	For these SPA / Ramsar sites, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of the designated species in the English Channel reduce the likelihood of exposure and therefore, the severity of impacts that might occur at population level to the sites. It is determined that significant effects would not therefore manifest on these distant sites after the likelihood and severity of	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	Northumbria Coast (UK) SPA and Ramsar Northumberland Marine (UK) SPA Coquet Island (UK) SPA Farne Islands (UK) SPA St Abb's Head to Fast Castle (UK) SPA Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA Imperial Dock Lock, Leith (UK) SPA Deenish Island and Scariff Island (IE) SPA Fowlsheugh (UK) SPA Puffin Island (IE) SPA Skelligs (IE) SPA Blasket Island (IE) SPA			effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.	

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	Cruagh Island (IE) SPA Ythan Estuary, Sands of Forvie and Meikle Loch (UK) SPA Ythan Estuary and Meikle Loch (UK) Ramsar Buchan Ness to Collieston Coast (UK) SPA Loch of Strathbeg (UK) SPA Loch of Strathbeg (UK) Ramsar Troup, Pennan and Lion's Head (UK) SPA Rum (UK) SPA Inner Moray Firth (UK) SPA Inner Moray Firth (UK) Ramsar Cromarty Firth (UK) SPA Cromarty Firth (UK) Ramsar				

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	East Caithness Cliffs (UK) SPA North Caithness Cliffs (UK) SPA Pentland Firth Islands (UK) SPA Hoy (UK) SPA Copinsay (UK) SPA Auskerry (UK) SPA St Kilda (UK) SPA Marwick Head (UK) SPA Rousay (UK) SPA Calf of Eday (UK) SPA Sule Skerry and Sule Stack (UK) SPA West Westray (UK) SPA Papa Westray (North Hill and Holm) (UK) SPA Fair Isle (UK) SPA Sumburgh Head (UK) SPA Noss (UK) SPA Foula (UK) SPA				

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	Papa Stour (UK) SPA Ronas Hill - North Roe and Tingon (UK) SPA Ronas Hill - North Roe and Tingon (UK) Ramsar Otterswick and Graveland (UK)S SPA Fetlar (UK) SPA Ramna Stacks and Gruney (UK) SPA Hermaness, Saxa Vord and Valla Field (UK) SPA Copeland Islands (UK) SPA Caithness and Sutherland Peatlands (UK) SPA Caithness and Sutherland Peatlands (UK) Ramsar Orkney Mainland Moors (UK) SPA				

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	Mousa (UK) SPA Tips of Corsemaul and Tom Mor (UK) SPA North Rona and Sula Sgeir (UK) SPA Alisa Craig SPA Grassholm (UK) SPA				
Matrix 111	Alderney West Coast and the Burhou Islands (UK) Ramsar	Fulmar	Changes in prey availability and behaviour	**Findings as above**	**No LSE, alone or in-combination**
			Disturbance / displacement		
		Gannet	Changes in prey availability and behaviour	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. LSE is discounted in relation to effects acting alone	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
			Disturbance / displacement	This species has very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.* 2019). Therefore, LSE can be discounted for Rampion 2 acting alone.	**No LSE, alone or in-combination**

Table 7.2 Consideration of Likely Significant Effects - conclusions for operation and maintenance phase of Rampion 2

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 0	River Itchen SAC (50.5km to the mouth of the Southampton Water (the estuary connecting the River Itchen to the marine environment))	Atlantic salmon	Underwater noise Suspended sediment Effects on prey Pollution Physical disturbance Barriers EMF	The potential impacts within the operational phase would be substantially lower than construction in terms of magnitude and frequency. The direct exposure of individuals from the SAC population to these effects is possible, although limited to passing fish on migration. The rate of exposure and the severity and duration of the effects experienced locally are considered to be very low and small to negligible in the context of the wider environment. In view of the dispersion capacity of the open coast environment, and the distance over which these features disperse in that environment, no interactions or pathways to significant impacts are identified from Rampion 2, either alone or in-combination.	**No LSE, alone or in-combination**
Matrix 1	Arun Valley (UK) Ramsar (2.8km from onshore component of the Scoping Boundary)	Various wetland invertebrates Various rare and scare	Changes in hydrology Pollution events Emissions to air INNS Land take / land coverage change	This Ramsar site is not within the ZoI associated with changes associated with these effect categories. Given the geographic separation between any Rampion 2 infrastructure and the site boundary and as these features are	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
		plant species Diverse and rich ditch flora	Increased light In-combination effects	restricted in mobility, no pathways to significant effects are identified either alone, or in-combination.	
		Assemblage of wintering waterfowl Northern pintail	Changes in hydrology	Changes in hydrology could occur up to 1km from the Scoping Boundary due to operation and maintenance activities and the presence of buried infrastructure. Although the area that may be affected is outside of the Arun Valley Ramsar site, designated waterfowl could use parts of it for foraging (i.e. it is functionally linked land). Changes in hydrology could alter the suitability of certain habitat types for foraging both alone and in-combination.	**Potential for LSE**, consider at Appropriate Assessment
			Noise and vibration	Operational and maintenance activities will not result in increases in noise and vibration across functionally linked land of the ornithological features of the Arun Valley Ramsar site as the infrastructure will be buried. Rampion 2 acting alone would not result in LSE.	**No LSE, alone.**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
			Pollution events Emissions to air INNS Land take / land coverage change Fragmentation of habitats Increased light	Although functionally linked land accessed by waterfowl could be affected by these changes caused by these effects, the pathways to significant effects are considered weak. Affected areas would be highly localised and small in extent and would represent only a small fraction of available foraging habitat within the Arun Valley. Significant effects are not anticipated from these effects acting alone.	**No LSE, alone.**
			The nine considered pathways, in-combination	The magnitude of the potential effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for the Rampion 2 acting alone, which could amount to LSE-in-combination.	**Potential for LSEI**, pending further information.
Matrix 2	Arun Valley (UK) SPA (2.8km from onshore component of the Scoping Boundary	Bewick's swan Non-breeding water fowl assemblage including shoveler, teal, wigeon	Changes in hydrology	Changes in hydrology could occur up to 1km from the Scoping Boundary due to operational (maintenance) activities and the presence of buried infrastructure. Although the area that may be affected is outside of the Arun Valley SPA, Bewick's swan and the non-breeding waterfowl assemblage could use parts of it for foraging (i.e. it is functionally linked land). Changes in hydrology could alter the	**Potential for LSE**, consider at Appropriate Assessment

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
		and Bewick's swan.		suitability of certain habitat types for foraging, both alone and in-combination.	
			Pollution events Emissions to air INNS Land take / land coverage change Fragmentation of habitats Noise and vibration Increased light	Although functionally linked land accessed by waterfowl could be affected by these changes caused by these effects, the pathways to significant effects are considered weak. Affected areas would be highly localised and small in extent and would represent only a small fraction of available foraging habitat within the Arun Valley. Significant effects are not anticipated from these effects acting alone.	**No LSE, alone.**
			The nine considered pathways, in-combination	The magnitude of the potential effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for the Rampion 2 acting alone, which could amount to a LSE in-combination.	**Potential for LSEI**, pending further information.
Matrix 3	Arun Valley (UK) SAC (2.8km from Onshore cable corridor)	Ramshorn snail	Changes in hydrology Pollution events Emissions to air INNS Land take / land coverage change	The Arun Valley SAC is not within the Zone of Influence associated with the potential changes caused by these effects and therefore, Rampion 2 would not contribute towards effects on the Arun Valley SAC, alone or in-combination.	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 4	The Mens (UK) SAC (11km from Onshore cable corridor)	Barbastelle bat	Changes in hydrology Pollution events Emissions to air INNS Land take / land coverage change Noise and vibration Fragmentation or severance of habitats Increased light levels	The potential impacts within the operational phase would be substantially lower than construction in terms of magnitude and frequency. The ZoI associated with these effects during operations would not overlap with the Mens SAC, therefore no direct effects on the designated site are predicted. Although functionally linked land could be affected, the areas would be highly localised and small in extent and would represent only a small fraction of available foraging habitat for barbastelle in the area and would be towards the limits of their typical foraging range. Significant effects are not anticipated from these effects acting alone.	**No LSE, alone.**
			The nine considered pathways, in-combination	The magnitude of the potential effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for the Rampion 2 acting alone, which could amount to a LSE in-combination.	**Potential for LSEI**, pending further information.

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 5	Duncton to Bignor Escarpment (UK) SAC (6.5km from Onshore cable corridor)	*Asperulo-Fagetum* beech forests	Changes in hydrology Pollution events Emissions to air INNS Land take / land coverage change	The SAC is not within the Zone of Influence associated with the potential changes caused by these effects and therefore, Rampion 2 would not contribute towards effects on the SAC, either alone or in-combination.	**No LSE, alone or in-combination**
Matrix 6 and 7	Pagham Harbour (UK) Ramsar (onshore only) (9.2km from Onshore cable corridor)	Dark-bellied Brent goose	Changes in hydrology Pollution events Emissions to air INNS Land take / land coverage change Fragmentation or severance of habitats Noise and vibration Increased light levels	These sites are not within the ZoI for any direct effect pathways related to these effects. Functionally linked land for dark-bellied Brent geese of the sites is unlikely to be affected as the Scoping Boundary is at the edge of their foraging range, and any infrastructure is likely to be, at least several hundred metres, further away from the site boundaries. It is determined that impacts related to these effects would be *de minimis* to the extent impacts would not amount to a discernible contribution to significant effects in-combination.	**No LSE, alone or in-combination**
Matrix 8	Solent Maritime (UK) SAC (15.7 km to Array)	Estuaries Spartina swards Atlantic salt meadows	Suspended sediment and deposition	Sediment mobilisation during operation and maintenance activities would be localised and intermittent in nature. In view of this, the distance of this site from the Scoping Boundary and the significant potential for dilution and dispersion in the	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
		Sandbanks which are slightly covered by sea water all the time Mudflats and sandflats not covered by seawater at low tide Coastal lagoons Salicornia and other annuals colonizing mud and sand		open coastal environment, effects are considered *de minimis* and LSE (from pathway acting alone and in-combination) is therefore discounted.	
			INNS	Turbine foundations and cable protection could create enhanced habitat for INNS if this habitat were to provide a sink for particles dispersing from an existing site/source (the 'stepping stone' effect), thereby increasing the risk to habitats and ecosystems within this SAC. Existing offshore wind farms (e.g. within the North Sea) provide no evidence for the viability of this pathway. LSE (from pathway acting alone and in-combination) is therefore discounted.	**No LSE, alone or in-combination**
			Physical processes	Changes to physical processes are expected to be small scale and localised in nature with no implications for the habitats within this SAC. On present information, however, LSE cannot be discounted without further clarification concerning about physical processes and how the presence of array structures and/ or sub-surface cables could influence the rate of erosion and deposition of sediment and / or prompt	**Potential for LSE**, pending further information

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				changes in water movement (e.g. to wave action).	
			Pollution	Rampion 2 has very low potential to generate emissions to the marine environment during the construction activities proposed. Further applying professional judgement about the nature of the receiving environment, it is anticipated that contamination would be subject to significant dilution and quickly dissipated to non-harmful levels in the open coastal environment over this distance (15.7km). Effects are considered *de minimis* and LSE (from pathway acting alone and in-combination) is therefore discounted.	**No LSE, alone or in-combination**
Matrix 9	South Wight Maritime (UK) SAC (20.5 km to Array)	Reefs Vegetated sea cliffs of the Atlantic and Baltic Coasts Submerged or partially	Suspended sediment and deposition	Sediment mobilisation during operation and maintenance activities would be localised and intermittent in nature. In view of this, the distance of this site from the Scoping Boundary and the significant potential for dilution and dispersion in the open coastal environment, effects are considered *de minimis* and LSE (from pathway acting alone and in-combination) is therefore discounted.	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
		submerged sea caves	INNS	Turbine foundations and cable protection could create enhanced habitat for INNS if this habitat were to provide a sink for particles dispersing from an existing site/source (the 'stepping stone' effect), thereby increasing the risk to habitats and ecosystems within this SAC. Existing offshore wind farms (e.g. within the North Sea) provide no evidence for the viability of this pathway. LSE (from pathway acting alone and in-combination) is therefore discounted.	**No LSE, alone or in-combination**
			Physical processes	Changes to physical processes are expected to be small scale and localised in nature with no implications for the habitats within this SAC. On present information, however, LSE cannot be discounted without further clarification concerning about physical processes and how the presence of array structures and/ or sub-surface cables could influence the rate of erosion and deposition of sediment and / or prompt changes in water movement (e.g. to wave action).	**Potential for LSE**, pending further information

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
			Pollution	Rampion 2 has very low potential to generate emissions to the marine environment during the construction activities proposed. Further applying professional judgement about the nature of the receiving environment, it is anticipated that contamination would be subject to significant dilution and quickly dissipated to non-harmful levels in the open coastal environment over this distance (15.7km). Effects are considered *de minimis* and LSE (from pathway acting alone and in-combination) is therefore discounted.	**No LSE, alone or in-combination**
Matrix 9A	Solent and Isle of Wight lagoons (UK) SAC (30.0 km to Array)	Costal lagoons* priority feature	Suspended sediment and deposition	Sediment mobilisation during operation and maintenance activities would be localised and intermittent in nature. In view of this, the distance of this site from the Scoping Boundary and the significant potential for dilution and dispersion in the open coastal environment, effects are considered *de minimis* and LSE (from pathway acting alone and in-combination) is therefore discounted.	**No LSE, alone or in-combination**
			INNS	Turbine foundations and cable protection could create enhanced habitat for INNS if this habitat were to provide a sink for	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				particles dispersing from an existing site/source (the 'stepping stone' effect), thereby increasing the risk to habitats and ecosystems within this SAC. Existing offshore wind farms (e.g. within the North Sea) provide no evidence for the viability of this pathway. LSE (from pathway acting alone and in-combination) is therefore discounted.	
			Physical processes	Changes to physical processes are expected to be small scale and localised in nature with no implications for the habitats within this SAC. On present information, however, LSE cannot be discounted without further clarification concerning about physical processes and how the presence of array structures and/ or sub-surface cables could influence the rate of erosion and deposition of sediment and / or prompt changes in water movement (e.g. to wave action).	**Potential for LSE**, pending further information
			Pollution	Rampion 2 has very low potential to generate emissions to the marine environment during the construction activities proposed. Further applying professional judgement about the nature	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				of the receiving environment, it is anticipated that contamination would be subject to significant dilution and quickly dissipated to non-harmful levels in the open coastal environment over this distance (15.7km). Effects are considered *de minimis* and LSE (from pathway acting alone and in-combination) is therefore discounted.	
Matrix 10	Littoral Cauchois (FR) SAC (94.4 km to Array)	Grey seal	Underwater noise Vessel disturbance Audio / visual disturbance (above surface) Collision risk Effects on prey Pollution Suspended sediment EMF	Evidence indicates grey seal at sea density in the immediate vicinity of Rampion 2 is low. E.g. Russell *et al*., 2017 (Updated Seal Usage Maps) present raw tagging and haul out data that indicate no usage of the English Channel by grey seal. There are no important habitats (e.g. haul-outs or breeding sites) within the Zone of Influence of Rampion 2. Grey seal tagging data indicates a degree of connectivity between grey seals towards the western end of the English Channel and those towards the eastern end of the English Channel, but no connectivity east to west (Vincent *et al.,* 2017). While there is theoretical connectivity between Rampion 2 and SACs on the French coast to the east of Rampion 2,	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				significant effects at population level are not expected. This finding is based on the low risk of exposure (a very small numbers of animals present within the Zone of Influence) and the dilution of impacts on this SAC population over distance (at least 94km from the Scoping Boundary) and applies to effects, both alone and in-combination.	
		Sea lamprey Twait shad	Underwater noise Effects on prey Pollution Suspended sediment EMF	The potential impacts within the operational phase would be substantially lower than construction in terms of magnitude and frequency. Given the anticipated extent of physical effects associated with the operation of Rampion 2, and the lack of conceivable barriers to migration, it is considered that there is no potential for significant effect on migratory fish, or key habitats, either alone or in-combination.	**No LSE, alone or in-combination**
Matrix 11	Southern North Sea (UK) SAC (127.7 km to Array)	Harbour porpoise	Underwater noise	Low-level, localised noise from wind turbine generators (WTG) and operational and maintenance vessel traffic is likely to be of negligible	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				consequence in the context of background levels generated by shipping and human activities within the area and unlikely to produce a significant behavioural response, particularly as local species densities are low. LSE (from pathway acting alone and in-combination) is therefore discounted	
			Vessel disturbance Collision risk Effects on prey Pollution Suspended sediment Physical habitat loss and disturbance EMF	The significance of effects at population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these categories, the liklihood and or severity of the effect experienced locally is considered to be low to neglible. Effects would not therefore manifest on this distant SAC after the liklhood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.	**No LSE, alone or in-combination**
Matrix 12	23 transboundary sites within the NS MU	Harbour porpoise	Underwater noise	Low-level, localised noise from wind turbine generators (WTG) and operational and maintenance vessel traffic is likely to be of negligible consequence in the context of	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	(Between 101km and 1131km from the Array)			background levels generated by shipping and human activities within the area and unlikely to produce a significant behavioural response, particularly as local species densities are low. LSE (from pathway acting alone and in-combination) is therefore discounted.	
			Vessel disturbance Collision risk Effects on prey Pollution Suspended sediment Physical habitat loss and disturbance EMF	Each SAC is located over 100 km from the Array and Offshore cable corridor and well outside the Zone of Influence of Rampion 2. Direct effects would not result to harbour porpoise when present within their respective SACs. Due to the mobility of cetaceans, however, impacts could manifest on individuals associated with this SAC population that have left the confines of their host site and are present within the project‘s sphere of influence. It is assumed that all SACs with potential connectivitity to the species known within the effect footprint of Rampion 2 have the theoretical potential to be affected. However, the likelihood that a feature from this SAC is a) present within project’s effect footprint and b) the significance of effects to this SAC at population level are considered to decrease with a) distance, b) the	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				severity of the effect experienced locally and c) apportionment to the other SACs within the species range. For this pathway, the severity of the effect experienced locally is considered to be low to negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance, either alone or in-combination.	
Matrix 13	16 transboundary sites (Between 101km and 1131km from the Array)	Bottlenose dolphin	Underwater noise Vessel disturbance Collision risk Effects on prey Pollution Suspended sediment Physical habitat loss and disturbance EMF	The broadscale marine mammal data available clearly shows that the eastern English Channel (east of the Isle of Wight to Dungeness) typically holds a relatively low density and diversity of all cetacean species including for bottlenose dolphin. While connectivity between Rampion 2 and this SAC is theoretically possible (should an individual enter the Zone of Influence), the significance of effects at population level to this SAC population is considered non-significant levels given the distance, animal densities and the extremely low risk of exposure. No LSE is concluded on this basis, alone or in-combination.	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 14	15 transboundary sites Between 74km and 136km from the Array	Grey seal	Underwater noise Vessel disturbance Audio / visual disturbance (above surface) Collision risk Effects on prey Pollution Suspended sediment EMF	Evidence indicates grey seal at sea density in the immediate vicinity of Rampion 2 is low. E.g. Russell et al., 2017 (Updated Seal Usage Maps) present raw tagging and haul out data that indicate no usage of the English Channel by grey seal. There are no important habitats (e.g. haul-outs or breeding sites) within the Zone of Influence of Rampion 2. Grey seal tagging data indicates a degree of connectivity between grey seals towards the western end of the English Channel and those towards the eastern end of the English Channel, but no connectivity east to west (Vincent *et al.,* 2017). While there is theoretical connectivity between Rampion 2 and SACs on the French coast to the east of Rampion 2, significant effects at population level are not expected. This finding is based on the low risk of exposure (a very small numbers of animals present within the Zone of Influence) and the dilution of impacts on this SAC population over distance (at least 73 km from the Scoping Boundary).	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 15	8 transboundary sites Between 74km and 115km from the Array	Harbour seal	Underwater noise Vessel disturbance Audio / visual disturbance (above surface) Collision risk Effects on prey Pollution Suspended sediment EMF	Evidence indicates that harbour seal at sea density in the immediate vicinity of Rampion 2 is low, with some usage by harbour seal around the Solent and surrounding harbours (Russell *et al.,* 2017). Mean at sea usage (modelled) for harbour seals across the Rampion 2 study area is 0<1 animal/km2. Crucially, harbour seal tagging in French waters appears to show no connectivity to the UK (Vincent *et al.,* 2017). As there are no SACs with foraging range for this species on the south England coast, the prospect of connectivity and significance effects on the population of these transboundary SACs (all over 73 km from the Scoping Boundary) is discounted. While connectivity between Rampion 2 and this SAC is theoretically possible (via effects on a small number of individuals that enter the Zone of Influence), the significance of effects at population level is further considered to decrease to non-significant levels with distance and the low risk of exposure (small numbers of animals present within the Zone of Influence). No LSE is concluded on this basis. Project-related impacts to species from this site (over 90 km from the	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				Scoping Boundary) would be de minimis to the extent impacts would not amount to a discernible contribution to adverse effects in-combination.	
Matrix 16	Solent and Dorset Coast (UK) SPA (0.63km from Offshore cable corridor, 10 km from Array))	Common tern Sandwich tern	Collision risk	Both of these species have moderate vulnerability to collision risk (Bradbury *et al.* 2014). As the Array is located within mean maximum foraging range of this SPA for this species (Woodbury *et al.* 2019). LSE can therefore not be discounted for Rampion 2, either alone or in-combination.	**Potential for LSE**, consider at Appropriate Assessment
		Little tern	Collision risk	The Array is beyond mean maximum foraging range for this species (Woodward et al. 2019). LSE can therefore be discounted at this stage.	**No LSE, alone or in-combination**
		Sandwich tern	Disturbance / displacement	This species has moderate vulnerability to displacement by offshore wind farms (Bradbury et al. 2014) with some evidence of weak avoidance from post-Construction monitoring (Dierschke, Furness & Garth, 2016). The Array is within the mean-maximum foraging range for this species (Woodward et al. 2019). Therefore, LSE cannot be discounted at this stage.	**Potential for LSE**, consider at Appropriate Assessment

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
			Barrier effect	Based on the proximity of the Array to the breeding colony and the number of foraging trips required by terns per day during the chick rearing period (Masden *et al.,* 2010), LSE cannot be discounted for Rampion 2, either alone or in-combination.	**Potential for LSE**, consider at Appropriate Assessment
		Common tern Little tern Sandwich tern	Indirect impacts through the effects on prey species	Based on proximity and species sensitivity, LSE cannot be discounted on current information for Rampion 2, either alone or in-combination.	**Potential for LSE**, consider at Appropriate Assessment
Matrix 17 and 18	Pagham Harbour (UK) SPA and Ramsar (offshore) (9.2km from Offshore cable corridor , 13.6km from Array)	Common tern	Collision risk	Species has moderate vulnerability to collision risk (Bradbury *et al.* 2014). As the Array is located within mean maximum foraging range of this SPA for this species (Woodbury *et al.* 2019). LSE can therefore not be discounted for Rampion 2, either alone or in-combination.	**Potential for LSE**, consider at Appropriate Assessment
			Barrier effect	These species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury *et al*. 2014) and evidence from previous project assessments supports a finding of no LSE. Impacts would be *de minimis* to the	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				extent impacts would not amount to a discernible contribution to significant effects in-combination.	
			Direct disturbance and displacement	Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury *et al*. (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted for effects both alone and in-combination.	**No LSE, alone or in-combination**
			Indirect impacts through the effects on prey species	Based on proximity and species sensitivity, LSE cannot be discounted on current information.	**Potential for LSE**, consider at Appropriate Assessment
Matrix 19 and 20	Chichester and Langstone Harbours (UK) SPA and Ramsar (15.6km from Offshore cable	Common tern	Collision risk	These species have moderate vulnerability to collision risk with turbines (Bradbury et al. 2014). However, the Array is located beyond the mean maximum foraging range of these species (Woodward *et al*. 2019) from this site.	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	corridor, 22.3km from Array)		Indirect impacts through the effects on prey species	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors, this distance from the SPA, as only temporary and low-impact effects are anticipated for local fish and benthic ecology. It is considered there would be sufficient alternative resource available to support the species population and previous experience of other offshore wind farms supports a finding of no LSE. LSE is therefore discounted in relation to effects acting both alone and in-combination.	**No LSE, alone or in-combination**
			Barrier effect	These species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury et al, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted for effects both alone and in-combination.	**No LSE, alone or in-combination**
			Direct disturbance and displacement	Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury et al, (2014) as having low vulnerability to	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				displacement by offshore wind farms. LSE can be discounted for effects both alone and in-combination.	
		Sandwich tern	Collision risk	Species has moderate vulnerability to collision risk (Bradbury *et al.* 2014). As the Array is located within mean maximum foraging range of this SPA for this species (Woodbury *et al.* 2019). LSE can therefore not be discounted for Rampion 2, either alone or in-combination.	**Potential for LSE**, consider at Appropriate Assessment.
			Barrier effect	Based on the proximity of Rampion 2 to the breeding colony and the number of foraging trips required by terns per day during the chick rearing period (Masden *et al.,* 2010), an LSE cannot be discounted for Rampion 2, either alone or in-combination.	**Potential for LSE**, consider at Appropriate Assessment
			Direct disturbance and displacement	This species has moderate vulnerability to displacement by offshore wind farms (Bradbury *et al.,* 2014) with some evidence of weak avoidance from post-Construction monitoring (Dierschke, Furness & Garth, 2016). Rampion 2 is within the mean-maximum foraging range for this species (Woodward *et al.,*	**Potential for LSE**, consider at Appropriate Assessment

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				2019). Therefore, LSE cannot be discounted for Rampion 2, either alone or in-combination.	
			Indirect impacts through the effects on prey species	The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors, this distance from the SPA, as only temporary and low-impact effects are anticipated for local fish and benthic ecology. It is considered there would be sufficient alternative resource available to support the species population and previous experience of other offshore wind farms supports a finding of no LSE. LSE is therefore discounted in relation to effects acting both alone and in-combination.	**No LSE, alone or in-combination**
Matrix 21 and 22	Solent and Southampton Water (UK) SPA and Ramsar (28.3km to Array)	Sandwich tern	Collision risk	This species has moderate vulnerability to collision risk with turbines (Bradbury *et al.,* 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward *et al*., 2019) from this SPA. Therefore, LSE cannot be discounted for Rampion 2 acting either alone, or in-combination.	**Potential for LSE**, pending further information.
			Barrier effect	Based on the proximity of Rampion 2 to the breeding colony and the number of	**Potential for LSE**, consider

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				foraging trips required by terns per day during the chick rearing period (Masden *et al*., 2010), cannot be discounted for Rampion 2 acting either alone, or in-combination.	at Appropriate Assessment
			Direct disturbance and displacement	This species has moderate vulnerability to displacement by offshore wind farms (Bradbury *et al.,* 2014) with some evidence of weak avoidance from post-Construction monitoring (Dierschke, Furness & Garth, 2016). Rampion 2 is within the mean-maximum foraging range for this species (Woodward *et al.,* 2019). Therefore, LSE cannot be discounted for Rampion 2 acting either alone, or in-combination.	**Potential for LSE**, consider at Appropriate Assessment
Matrix 23	Dungeness, Romney Marsh and Rye Bay (UK) SPA (36.1km to Array)	Common tern Sandwich tern	Collision risk	These species have moderate vulnerability to collision risk with turbines (Bradbury *et al.* 2014). Based on the proximity of the Array and the mean maximum foraging range of these species (Woodward *et al.* 2019) from this site, potential l connectivity during the breeding season has been established and LSE cannot therefore be discounted for effects both alone and in-combination.	**Potential for LSE**, consider at Appropriate Assessment

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
			Direct disturbance and displacement	Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury *et al.,* (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted for effects both alone and in-combination.	**No LSE, alone or in-combination**
			Indirect impacts through the effects on prey species	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for these highly mobile receptors during operations. Potential impacts within the operational phase would be substantially lower than construction in terms of magnitude and frequency. As such, there would be sufficient alternative resource available to support the species population. LSE is therefore discounted for effects both alone and in-combination	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 24	Littoral seino-marin (FR) SPA (72.2km to Array)	Fulmar Kittiwake	Collision risk	These species have moderate to very high vulnerability to collision risk with turbines (Bradbury *et al.,* 2014). As Rampion 2 is located within the mean-maximum foraging range of this species (Woodward *et al*., 2019), the potential for LSE cannot be discounted with respect to Rampion operating both alone and in-combination.	**Potential for LSE**, consider at Appropriate Assessment
		Fulmar Kittiwake Lesser black-backed gull Great black-backed gull	Indirect impacts through the effects on prey species Barrier effect Direct disturbance and displacement	This species have significant mean-maximum foraging ranges and a high degree of habitat flexibility. As a result, any potential additional energetic expenditure as a result of barrier impacts would be trivial. Further, these species have very low vulnerability to displacement from offshore wind farms (Bradbury *et al.,* 2014). It is considered effects would be *de minimis* over this scale and there would be sufficient alternative resource available to support the species population. LSE is therefore discounted for effects both alone and in-combination.	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 25 and 26	Medway Estuary and Marshes (UK) SPA and Ramsar (91.5km to Array)	Common tern	Changes in prey availability and behaviour Indirect impacts through the effects on prey species Barrier effect Direct disturbance and displacement	This species has low vulnerability to these impacts. . Despite potential connectivity during migration, species are only recorded in low numbers in the study area. LSE can therefore be discounted for these effects both alone and in-combination.	**No LSE, alone or in-combination**
			Collision risk	This species has moderate vulnerability to collision risk with turbines (Bradbury *et al.,* 2014) and the Array is located beyond the mean maximum foraging range of these species (Woodward *et al*. 2019) from this site. Despite potential connectivity during migration, species are only recorded in low numbers in the study area suggesting Rampion 2 alone would not result in significant impacts.	**No LSE, alone**
			Effects in-combination - Collision risk	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.	**Potential for LSEI**, pending further information.

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 27	Outer Thames Estuary (UK) SPA (103.5km to Array)	Common tern	Collision risk Changes in prey availability and behaviour Indirect impacts through the effects on prey species Barrier effect Direct disturbance and displacement	This species has moderate vulnerability to collision risk with turbines (Bradbury *et al.,* 2014) and low vulnerability to the other impacts considered. The Array is located beyond the mean maximum foraging range of these species (Woodward *et al*. 2019) from this site. Despite potential connectivity during the breeding season, species are only recorded in low numbers in the study area. LSE can therefore be discounted for effects both alone and in-combination.	**No LSE, alone or in-combination**
Matrix 28 and 29	Foulness (Mid-Essex Coast Phase 5) (UK) SPA and Ramsar (109.9km to Array)	Common tern Sandwich tern	Changes in prey availability and behaviour Indirect impacts through the effects on prey species Barrier effect Direct disturbance and displacement	These species have low vulnerability to these impacts. Despite potential connectivity during migration, species are only recorded in low numbers in the study area. LSE can therefore be discounted for these effects both alone and in-combination.	**No LSE, alone or in-combination**
			Collision risk	This species has moderate vulnerability to collision risk with turbines (Bradbury *et al.,* 2014) and the Array is located beyond the mean maximum foraging range of these species (Woodward *et al*.	**No LSE, alone**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				2019) from this site. Despite potential connectivity during migration, species are only recorded in low numbers in the study area suggesting Rampion 2 alone would not result in significant impacts.	
			Effects in-combination - Collision risk	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.	**Potential for LSEI**, pending further information.
Matrix 30	Falaise du Bessin Occidental (FR) SPA (132.6km to Array)	Fulmar	Collision risk Changes in prey availability and behaviour Indirect impacts through the effects on prey species Barrier effect Direct disturbance and displacement	This species has low vulnerability to collision risk with turbines (Bradbury *et al.,* 2014). This species also has a significant mean-maximum foraging range with a high degree of habitat flexibility. As a result, any potential additional energetic expenditure as a result of barrier impacts will be trivial. This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al.,* 2014) and impacts are not anticipated to be significant over this scale. Effects are therefore unlikely to amount to LSE, alone or in-combination.	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
		Kittiwake	Collision risk	This species has moderate to very high vulnerability to collision risk with turbines (Bradbury *et al.,* 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward *et al.,* 2019) from this site. LSE can therefore not be discounted at this stage for Rampion 2 acting alone, or in-combination.	**Potential for LSE**, pending further information.
Matrix 31 & 32	Alde-Ore Estuary (UK) SPA and Ramsar (181.5 km to Array)	Lesser black-backed gull	Collision risk	Species has very high vulnerability to collision risk with turbines (Bradbury *et al.,* 2014). However, Rampion 2 is located a significant distance beyond the mean-maximum foraging range of this species (Woodward *et al.,* 2019) from this site. Connectivity during the non-breeding season is limited as species is largely migratory, travelling south following the breeding season (Wright *et al.,* 2012). Furthermore, an assessment of collision apportioned to this site outside of the breeding season by Percival 2013 for Rampion OWF found the impact to be negligible. It is therefore considered that no LSE would result from Rampion 2 acting alone.	**No LSE, alone**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
			Indirect impacts through the effects on prey species	The pathway to effects due to insufficient prey resource is weak for these highly-mobile receptors, over these scales. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Impacts related to this effect pathway would be *de minimis* to the extent impacts would not amount to a discernible contribution to significant effects alone or in-combination.	**No LSE, alone or in-combination**
			Barrier effect	Evidence suggests this species is attracted to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury *et al.,* (2014) as having low vulnerability to displacement by offshore wind farms. Over these scales, impacts related to this effect pathway would be *de minimis* to the extent impacts would not amount to a discernible contribution to significant effects alone or in-combination.	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
			Direct disturbance and displacement	This species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury *et al.,* 2014) and evidence from previous project assessments support a determination of no LSE. Therefore, and with reference to the distant proximity of this SPA from Rampion 2, LSE can be discounted for effects both alone and in-combination.	**No LSE, alone or in-combination**
			Effects in-combination - Collision risk	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.	**Potential for LSE**, pending further information.
		Sandwich tern	Collision risk Changes in prey availability and behaviour Indirect impacts through the effects on prey species Barrier effect Direct disturbance and displacement	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.	
Matrix 33	Chausey (FR) SPA (188.4km to Array)	Gannet	Collision risk Changes in prey availability and behaviour Indirect impacts through the effects on prey species Barrier effect Direct disturbance and displacement	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				environmental context either alone, or in-combination.	
Matrix 34	Cap d'Erquy-Cap Fréhel (FR) SPA (228.6km to Array)	Fulmar	As above	Significant effects discounted during operation on the basis of low to very low vulnerability to impacts coupled with a significant mean-maximum foraging range with a high degree of habitat flexibility.	**No LSE, alone or in-combination**
Matrix 35 & 36	The Wash (UK) SPA and Ramsar (230km from Offshore cable corridor)	Common tern	Changes in prey availability and behaviour Indirect impacts through the effects on prey species Barrier effect Direct disturbance and displacement	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.	
			Collision risk	This species has moderate vulnerability to collision risk with turbines (Bradbury *et al.,* 2014) and the Array is located beyond the mean maximum foraging range of these species (Woodward *et al*. 2019) from this site. Despite potential connectivity during migration, species are only recorded in low numbers in the study area suggesting Rampion 2 alone would not result in significant impacts.	**No LSE, alone**
			Effects in-combination - Collision risk	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.	**Potential for LSEI**, pending further information.

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 37 and 38	Breydon Water (UK) SPA and Ramsar (239.3 to Array)	Common tern	As above	As above	**Potential for LSEI**, pending further information.
Matrix 39	Tregor Goëlo (FR) SPA (244.7km to Array)	Fulmar	As above	Significant effects discounted during operation on the basis of low to very low vulnerability to impacts coupled with a significant mean-maximum foraging range with a high degree of habitat flexibility	**No LSE, alone or in-combination**
Matrix 40	Greater Wash (UK) SPA (244.km from Offshore cable corridor)	Common tern Sandwich tern	Changes in prey availability and behaviour Indirect impacts through the effects on prey species Barrier effect Direct disturbance and displacement	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				negligible effects in the wider environmental context either alone, or in-combination.	
			Collision risk	This species has moderate vulnerability to collision risk with turbines (Bradbury *et al.,* 2014) and the Array is located beyond the mean maximum foraging range of these species (Woodward *et al*. 2019) from this site. Despite potential connectivity during migration, species are only recorded in low numbers in the study area suggesting Rampion 2 alone would not result in significant impacts.	**No LSE, alone**
			Effects in-combination - Collision risk	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.	**Potential for LSEI**, pending further information.
Matrix 41 & 42	North Norfolk Coast (UK) SPA and Ramsar	Common tern Sandwich tern	As above	As above	**Potential for LSEI**, pending further information.

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	(251.9km from Offshore cable corridor)				
Matrix 43	Côte de Granit Rose-Sept Iles (FR) SPA (257.8km to Array)	Manx shearwater Fulmar European storm petrel Gannet	As above	Significant effects discounted during operation on the basis of low to very low vulnerability to impacts coupled with a significant mean-maximum foraging range with a high degree of habitat flexibility.	**No LSE, alone or in-combination**
		Gannet	Direct disturbance and displacement	This species has moderate to high vulnerability to displacement from offshore wind farms (Bradbury *et al.,* 2014). Therefore, LSE cannot be discounted at this stage.	**Potential for LSE**, consider at Appropriate Assessment
			Collision risk	This species has high vulnerability to collision risk with turbines (Bradbury et al, 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward et al, 2019) from this site. LSE can therefore not be discounted for Rampion 2 acting alone or in-combination.	**Potential for LSE**, consider at Appropriate Assessment

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
Matrix 44	Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a moroedd Benfro (UK) SPA (310.8km from Offshore cable corridor)	Manx shearwater European storm petrel Puffin Lesser black-backed gull	Collision risk Changes in prey availability and behaviour Indirect impacts through the effects on prey species Barrier effect Direct disturbance and displacement	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.	**No LSE, alone or in-combination**
Matrix 44	Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a moroedd Benfro (UK) SPA	Manx shearwater European storm petrel Puffin Lesser black-backed gull	Collision risk Changes in prey availability and behaviour Indirect impacts through the effects on prey species Barrier effect	As above	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	(310.8km from Offshore cable corridor)		Direct disturbance and displacement		
Matrix 45	Glannau Aberdaron and Ynys Enlli / Aberdaron Coast and Bardsey Island (UK) SPA (352.5km from Offshore cable corridor)	Manx shearwater	As above		**No LSE, alone or in-combination**
Matrix 46	Flamborough and Filey Coast (UK) SPA (366.5km from Offshore cable corridor)	Fulmar Herring gull	Collision risk Indirect impacts through the effects on prey species Barrier effect Direct disturbance and displacement	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of	**No LSE, alone**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.	
		Kittiwake Guillemot Gannet Razorbill	Collision risk Indirect impacts through the effects on prey species Barrier effect Direct disturbance and displacement	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible	**No LSE, alone.**
		Kittiwake Guillemot Gannet Razorbill	Effects in-combination - Collision risk	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.	**Potential for LSEI**, pending further information.
Matrix 53 and 54	Northumbria Coast (UK) SPA and Ramsar	Arctic tern	Effects in-combination - Collision risk	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. Therefore, significant effects from	**Potential for LSEI**, pending further information.

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				Rampion 2 acting alone are not anticipated. However, the magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.	
Matrix 55	Northumberland Marine (UK) SPA	Sandwich tern Common tern Arctic tern Guillemot Kittiwake	Effects in-combination - Collision risk	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. Therefore, significant effects from Rampion 2 acting alone are not anticipated. However, the magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current	**Potential for LSEI**, pending further information.

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
				information for Rampion 2 operating with other OWFs.	
Matrix 56	Coquet Island (UK) SPA	Sandwich tern Arctic tern Common tern	Effects in-combination - Collision risk	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. Therefore, significant effects from Rampion 2 acting alone are not anticipated. However, the magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.	**Potential for LSEI**, pending further information.
Matrix 57	Farne Islands (UK) SPA	Sandwich tern Kittiwake Guillemot	Effects in-combination - Collision risk	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. Therefore, significant effects from	**Potential for LSEI**, pending further information.

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
		Common tern Arctic tern		Rampion 2 acting alone are not anticipated. However, the magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.	
47 - 110	The following sites between 376km and 1104.5km from the Array: Farne Islands (UK) SPA St Abb's Head to Fast Castle (UK) SPA Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA Imperial Dock Lock, Leith (UK) SPA	Features considered as listed in **Table 5.7** and PINS matrices in **Appendix A**	Collision risk Changes in prey availability and behaviour Indirect impacts through the effects on prey species Barrier effect Direct disturbance and displacement	For these SPA / Ramsar sites, the significance of effects at a population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. For these effect categories, the likelihood and severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of the designated species in the English Channel reduce the likelihood of exposure and therefore, the severity of impacts that might occur at population level to the sites. It is determined that significant effects would not therefore manifest on these distant sites after the	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	Deenish Island and Scariff Island (IE) SPA Fowlsheugh (UK) SPA Puffin Island (IE) SPA Skelligs (IE) SPA Blasket Island (IE) SPA Cruagh Island (IE) SPA Ythan Estuary, Sands of Forvie and Meikle Loch (UK) SPA Ythan Estuary and Meikle Loch (UK) Ramsar Buchan Ness to Collieston Coast (UK) SPA Loch of Strathbeg (UK) SPA Loch of Strathbeg (UK) Ramsar Troup, Pennan and Lion's Head (UK) SPA			likelihood and severity of effects on the designated populations have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.	

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	Rum (UK) SPA Inner Moray Firth (UK) SPA Inner Moray Firth (UK) Ramsar Cromarty Firth (UK) SPA Cromarty Firth (UK) Ramsar East Caithness Cliffs (UK) SPA North Caithness Cliffs (UK) SPA Pentland Firth Islands (UK) SPA Hoy (UK) SPA Copinsay (UK) SPA Auskerry (UK) SPA St Kilda (UK) SPA Marwick Head (UK) SPA Rousay (UK) SPA Calf of Eday (UK) SPA Sule Skerry and Sule Stack (UK) SPA West Westray (UK) SPA				

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	Papa Westray (North Hill and Holm) (UK) SPA Fair Isle (UK) SPA Sumburgh Head (UK) SPA Noss (UK) SPA Foula (UK) SPA Papa Stour (UK) SPA Ronas Hill - North Roe and Tingon (UK) SPA Ronas Hill - North Roe and Tingon (UK) Ramsar Otterswick and Graveland (UK)S SPA Fetlar (UK) SPA Ramna Stacks and Gruney (UK) SPA Hermaness, Saxa Vord and Valla Field (UK) SPA Copeland Islands (UK) SPA				

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
	Caithness and Sutherland Peatlands (UK) SPA Caithness and Sutherland Peatlands (UK) Ramsar Orkney Mainland Moors (UK) SPA Mousa (UK) SPA Tips of Corsemaul and Tom Mor (UK) SPA North Rona and Sula Sgeir (UK) SPA Alisa Craig SPA Grassholm (UK) SPA				
Matrix 111	Alderney West Coast and the Burhou Islands (UK) Ramsar	Fulmar	Collision risk Changes in prey availability and behaviour Indirect impacts through the effects on prey species Barrier effect Direct disturbance and displacement	**Findings as above**	**No LSE, alone or in-combination**

Matrix ID	European site	Feature(s) assessed	Potential effect-pathway to LSE	Consideration of LSE	Conclusion
		Gannet	Indirect impacts through the effects on prey species	Temporary and low-impact effects are anticipated for local fish and benthic ecology. The pathway to effects due to insufficient prey resource is weak for this highly-mobile receptor.	**No LSE, alone or in-combination**
			Barrier effect	This species has a significant mean-maximum foraging range with a high degree of habitat flexibility. As a result, any potential additional energetic expenditure as a result of barrier impacts will be trivial.	**No LSE, alone or in-combination**
			Collision risk	This species has high vulnerability to collision risk with turbines (Bradbury *et al.,* 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward *et al.,* 2019) from this site. LSE can therefore not be discounted at this stage for effects either alone, or in-combination.	**Potential for LSE**, consider at Appropriate Assessment
			Direct disturbance and displacement	This species has moderate to high vulnerability to displacement from offshore wind farms (Bradbury *et al.,* 2014). Therefore, LSE cannot be discounted at this stage for effects either alone, or in-combination.	**Potential for LSE**, consider at Appropriate Assessment

8. Conclusion

The overall conclusions of the HRA Screening process are provided in this section and the European sites (and effect-pathways) for which LSE cannot be discounted and for which, a Stage two Appropriate Assessment (Stage 2, AA) is required are clearly reported.

8.1.1 This report presents information to support the first stage in the HRA process (the Screening assessment) for the proposed Rampion 2 Offshore Windfarm (Rampion 2), as required under The Conservation of Habitats and Species Regulations 2017 and The Conservation of Offshore Marine Habitats and Species Regulations 2017 that transpose the Habitats and Birds Directives (Council Directives 92/43/EEC and 2009/147/EC) into UK law.

8.1.2 An exercise to inform HRA Stage 1 (Screening) was undertaken to identify European site features with the potential to be affected by Rampion 2. The purpose of the Screening was to identify whether the proposals would result in LSE, alone or in combination, on any European sites.

8.1.3 The environmental effects that could arise from the implementation of Rampion 2 have been examined for the potential to affect the ecology within or associated with 148 European sites (50 SACs, 19 Ramsar wetland sites and 79 SPAs), all with the potential to be spatially connected to the project's sphere of influence. The potential significance of implications of the project on European sites were considered with reference to physical and non-physical disturbance, physical interactions, pollution, hydrological and coastal processes and invasive species.

8.1.4 A summary of the European sites, features and potential impacts for which a potential for a LSE has been identified as a result of Rampion 2, both alone and/or in combination with other plans or projects (recognising that there will be further discussion with local authorities and Statutory Nature Conservation Bodies) to identify other potential in-combination effects), is given in **Table 8.1.**

8.1.5 With regard to the habitats and species of European sites, their vulnerabilities and Conservation Objectives and based on the best available information available, LSE as a result of the Project could not be discounted for 38 European sites. It is further recognised that further discussion with local authorities and Statutory Nature Conservation Bodies is required to define other potential in-combination effects.

8.1.6 This outcome informs the requirement for further assessment (Appropriate Assessment) and the consideration of mitigation measures at Stage 2 of the HRA process.

Table 8.1 European sites and features for which Potential LSEs have been identified

European site	Relevant features*	Phase	Effect(s)
River Itchen SAC	Atlantic salmon	Construction	Underwater noise
Arun Valley (UK) Ramsar	Northern pintail Assemblage of wintering waterfowl	Construction	Changes in hydrology Noise and vibration Potential LSE in-combination
		Operation	Changes in hydrology Potential LSE in-combination
Arun Valley (UK) SPA	Bewick's swan	Construction	Changes in hydrology Fragmentation or severance of habitats Noise and vibration Potential LSE in-combination
		Operation	Changes in hydrology Potential LSE in-combination
The Mens (UK) SAC	Barbastelle bat	Construction	Fragmentation or severance of habitats Increased light levels Potential LSE in-combination

European site	Relevant features*	Phase	Effect(s)
		Operation	In-combination effects
Solent Maritime (UK) SAC	Estuaries Spartina swards Atlantic salt meadows Sandbanks which are slightly covered by sea water Mudflats and sandflats not covered by seawater at low tide Coastal lagoons Salicornia and other annuals colonizing mud and sand	Construction	Suspended sediment and deposition INNS
		Operation	Physical processes
South Wight Maritime (UK) SAC	Reefs Vegetated sea cliffs of the Atlantic and Baltic Coasts Submerged or partially submerged sea caves	Construction	Suspended sediment and deposition INNS
		Operation	Physical processes
Solent and Isle of Wight lagoons (UK) SAC	Costal lagoons* priority feature	Construction	Suspended sediment and deposition INNS
		Operation	Physical processes
Solent and Dorset Coast (UK) SPA	Common tern Little tern Sandwich tern	Construction	Changes in prey availability and behaviour
		Operation	Indirect impacts through the effects on prey species

European site	Relevant features*	Phase	Effect(s)
	Common tern Sandwich tern	Operation	Collision risk
	Sandwich tern	Operation	Barrier effect Direct disturbance and displacement
Pagham Harbour (UK) SPA and Ramsar	Common tern	Construction	Changes in prey availability and behaviour
		Operation	Collision risk Indirect impacts through effects on prey species
		Operation	Collision risk Barrier effect Direct disturbance and displacement
Chichester and Langstone Harbours (UK) SPA and Ramsar	Sandwich tern	Operation	Collision risk Barrier effect Direct disturbance and displacement
Solent and Southampton Water (UK) SPA and Ramsar	Sandwich tern	Operation	Collision risk Barrier effect Direct disturbance and displacement

European site	Relevant features*	Phase	Effect(s)
Dungeness, Romney Marsh and Rye Bay (UK) SPA	Common tern Sandwich tern	Operation	Collision risk
Littoral seino-marin (FR) SPA	Kittiwake Lesser black-backed gull	Operation	Collision risk
Medway Estuary and Marshes (UK) SPA and Ramsar	Common tern	Operation	Collision risk in-combination with other OWF
Foulness (Mid-Essex Coast Phase 5) (UK) SPA and Ramsar	Common tern Sandwich tern	Operation	Collision risk in-combination with other OWF
Falaise du Bessin Occidental (FR) SPA	Kittiwake	Operation	Collision risk
Alde-Ore Estuary (UK) SPA and Ramsar	Lesser black-backed gull	Operation	Collision risk in-combination with other OWF
Flamborough and Filey Coast SPA	Guillemot Razorbill	Construction	Direct disturbance and displacement in-combination with other OWF
	Kittiwake Gannet	Operation	Collision risk in-combination with other OWF

European site	Relevant features*	Phase	Effect(s)
	Gannet Guillemot Razorbill	Operation	Direct disturbance and displacement in-combination with other OWF
The Wash (UK) SPA and Ramsar	Common tern	Operation	Collision risk in-combination with other OWF
Breydon Water (UK) SPA & Ramsar	Common tern	Operation	Collision risk in-combination with other OWF
Greater Wash (UK) SPA	Common tern Sandwich tern	Operation	Collision risk in-combination with other OWF
North Norfolk Coast (UK) SPA & Ramsar	Common tern Sandwich tern	Operation	Collision risk in-combination with other OWF
Côte de Granit Rose-Sept Iles (FR) SPA	Gannet	Operation	Collision risk Direct disturbance and displacement
Northumbria Coast (UK) SPA and Ramsar	Arctic tern	Operation	Collision risk in-combination with other OWF

European site	Relevant features*	Phase	Effect(s)
Northumberland Marine (UK) SPA	Sandwich tern Common tern Arctic tern Guillemot Kittiwake	Operation	Collision risk in-combination with other OWF
Coquet Island (UK) SPA	Sandwich tern Arctic tern Common tern	Operation	Collision risk in-combination with other OWF
Farne Islands (UK) SPA	Sandwich tern Kittiwake Guillemot Common tern Arctic tern	Operation	Collision risk in-combination with other OWF
Alderney West Coast and the Burhou Islands (UK) Ramsar	Gannet	Operation	Collision risk Direct disturbance and displacement

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Appendix A
Screening Matrices

HRA Screening Matrix 0: River Itchen (UK) SAC

Name of European site:	**River Itchen (UK) SAC**																								
EU Code:	**UK0012599**																								
Distance to Project:	**50.5 km to the mouth of the Southampton Water (estuary connecting the River Itchen to the marine environment)**																								
Likely Effects of Project																									
Effect	**Underwater noise**			**Suspended sediment and deposition**			**Effects on prey**			**Pollution**			**Physical disturbance**			**Barriers**			**EMF**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Atlantic salmon	√a	×b	√a	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×c	×c	×c
Otter																								
White-clawed (or Atlantic stream) crayfish																								
Brook lamprey																								
Bullhead																								
Southern damselfly																								
Water courses of plain to montane levels																								

Evidence supporting conclusions:

√a	Auditory injury and lethal effects to migratory fish would only be expected at very close range. Therefore, the exposure of individuals from the SAC population to noise and vibration during construction activities would be limited to passing migratory fish undertaking migrations. As the projects Zone of Influence has not been defined by noise modelling, the risk related to the potential for a ‚noise barrier' to intercept migraotory routes. Effects cannot be quantified and LSE cannot be excluded at this stage from effects acting either alone or in-combination. Pathway requires consideration at HRA Stage 2.
×b	The direct exposure of individuals from the SAC population to these effects is possible, although limited to passing fish on migration. The rate of exposure and the severity and duration of the effects experienced locally are considered to be very low and small to negligible in the context of the wider environment. In view of the dispersion capacity of the open coast environment, and the distance over which these features disperse in that environment, no interactions or pathways to significant impacts are identified.
×c	The magnitude of the potential LSE identified (relating to underwater noiset) could act in-combination with other plans and projects, resulting in a greater level of impact than for Rampion 2 alone. These pathways will be considered at Stage 2. No in-combination issues are identified through the amalgamation of non-significant effects

HRA Screening Matrix 1: Arun Valley (UK) Ramsar

Name of European site:	**Arun Valley (UK) Ramsar**
EU Code:	**UK11004**
Distance to Project:	**2.8 km from Onshore cable corridor**
Likely Effects of Project	

Effect	**Changes in hydrology**			**Pollution events**			**Emissions to air**			**INNS**			**Land take / land cover change**			**Fragmentation or severance of habitats**			**Noise and vibration**			**Increased light levels**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Seven wetland invertebrates listed in the British Red Data Book	×a	×a	×a	×b	×b	×b	×c	×c	×c	×d	×d	×d	×e	×e	×e										×f	×f	×f
Four nationally rare and four nationally scarce plant species	×a	×a	×a	×b	×b	×b	×c	×c	×c	×d	×d	×d	×e	×e	×e										×f	×f	×f
Diverse and rich ditch flora	×a	×a	×a	×b	×b	×b	×c	×c	×c	×d	×d	×d	×e	×e	×e										×f	×f	×f
Assemblage of wintering waterfowl of international importance	✓g	✓g	✓g	×h	×h	×h	×c	×c	×c	×d	×d	×d	×e	×e	×e	×i	×i	×i	✓k	×l	✓k	×m	×n	×m	✓o	✓o	✓o
Northern pintail	✓g	✓g	✓g	×h	×h	×h	×c	×c	×c	×d	×d	×d	×e	×e	×e	×j	×j	×j	✓k	×l	✓k	×m	×n	×m	✓o	✓o	✓o

Evidence supporting conclusions:

×a	The Arun Valley Ramsar site is not within the Zone of Influence associated with the potential changes in hydrology; the population of wetland invertebrates within the Ramsar site are also restricted in mobility and will therefore not access functionally linked land within the ZOI either.
×b	The Arun Valley Ramsar site is not within the Zone of Influence associated with the potential pollution events; the populations of wetalnd invertebrates associated with the Ramsar site are restricted in mobility and will therefore not access functionally linked land within the ZOI either.
×c	The Arun Valley Ramsar site is not within 200m of the Scoping Boundary and is therefore is outside the Zone of Influence for emissions associated with vehicles or plant installing, maintaining or decommissioning the proposed infrastructure. The Arun Valley Ramsar site is also not within 200m of roads that are likely to be used by traffic associated with construction or decommissioning activity. Any vehicles on roads within 200m that are associated with the project will be small in number, will take place over a temporary period and will not result in an effect that would be considered irreversible.
×d	The Zone of Influence associated with the spread of invasive non-native species during the construction, operation or decommissioning phases of the project does not overlap with the Arun Valley Ramsar site.
×e	The Arun Valley Ramsar site is over 3km away from any location that may be subject to permanent or temporary land take associated with the project.
×f	The project will not contribute towards in-combination effects on the Arun Valley Ramsar site (for habitat, flora and invertebrate features) due to the nature of the designated feature and the geographic separation between any project infrastructure and the Ramsar boundary.
✓g	Changes in hydrology could occur upto 1km from the Scoping Boundary due to project activities and the presence of buried infrastructure. Although the area that may be affected is outside of the Arun Valley Ramsar site, designated waterfowl could use parts of it for foraging (i.e. it is functionally linked land). Changes in hydrology could alter the suitability of certain habitat types for foraging.
×h	The Zone of Influence associated with the loss of pollutants during the construction, operation or decommissioning phases of the project does not overlap with the Arun Valley Ramsar site, therefore no direct effects on the designated site are predicted. Although functionally linked land accessed by waterfowl could be affected, the areas would be highly localised and small in extent and would represent only a small fraction of available foraging habitat within the Arun Valley.
×i	Habitats that may be used by the non-breeding waterfowl assemblage (shoveler, teal and wigeon) for foraging are within the Scoping Boundary, although are remote from all cable route and substation options (i.e. outside of usual foraging distances). As construction, operation or decommssioning activities will not be occurring within the potentail functionally linked land of this feature no likely significant effect is identified.
×j	Habitats that may be used by northern pintail for foraging are within the Scoping Boundary, although are remote from all cable route and substation options as shallow inland waters are avoided by the cable route options.
✓k	Construction and decommissioning activities will result in increases in noise and vibration across functionally linked land of the ornithological features of the Arun Valley Ramsar site. This could potentially result in the disturbance and displacement of foraging individuals.
×l	Operational activities will not result in increases in noise and vibration across functionally linked land of the ornithological features of the Arun Valley Ramsar site as the infrastructure will be buried.
×m	Lighting of construction and decommissioning activities will not result in a likely significant effect on the ornitholgical features of the Arun Valley Ramsar site as it will be highly localised (the widest effects associated with vehicle headlights) in an area with an abundance of potential foraging areas.
×n	The cable route will not be lit during the operational phase, and the substation location (which will have security lighting) will be in excess of 10km from the Arun Valley Ramsar site and therefore not in an area that could be considered functionally linked.
✓o	The extent of the likely signficant effects identified for ornithological features of the Arun Valley Ramsar site could act in-combination with other plans and projects resulting in a greater level of impact than for the project alone.

HRA Screening Matrix 2: Arun Valley (UK) SPA

Name of European site:	**Arun Valley (UK) SPA**
EU Code:	**UK9020281**
Distance to Project:	**2.8 km from Onshore cable corridor**
Likely Effects of Project	

Effect	**Changes in hydrology**			**Pollution events**			**Emissions to air**			**INNS**			**Land take / land cover change**			**Fragmentation or severance of habitats**			**Noise and vibration**			**Increased light levels**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Bewick's swan	√a	√a	√a	X b	X b	X b	X c	X c	X c	X d	X d	X d	X e	X e	X e	√f	X g	√f	√i	X j	√i	X k	X l	X k	√m	√m	√m
Non-breeding water fowl assemblage including shoveler, teal, wigeon and Bewick's swan.	√a	√a	√a	X b	X b	X b	X c	X c	X c	X d	X d	X d	X e	X e	X e	X h	X h	X h	√i	X j	√i	X k	X l	X k	√m	√m	√m

Evidence supporting conclusions:

√a	Changes in hydrology could occur upto 1km from the Scoping Boundary due to construction activities and the presence of buried infrastructure. Although the area that may be affected is outside of the Arun Valley SPA, Bewick's swan and the non-breeding waterfowl assemblage could use parts of it for foraging (i.e. it is functionally linked land). Changes in hydrology could alter the suitability of certain habitat types for foraging.
X b	The Zone of Influence associated with the loss of pollutants during the construction, operation or decommissioning phases of the project does not overlap with the Arun Valley SPA, therefore no direct effects on the designated site are predicted. Although functionally linked land could be affected, the areas would be highly localised and small in extent and would represent only a small fraction of available foraging habitat within the Arun Valley.
X c	The Arun Valley SPA is not within 200m of the Scoping Boundary and is therefore is outside the Zone of Influence for emissions associated with vehicles or plant installing, maintaining or decommissioning the proposed infrastructure. The Arun Valley SPA is also not within 200m of roads that are likely to be used by traffic associated with construction or decommissioning activity. Any vehicles on roads within 200m that are associated with the project will be small in number, will take place over a temporary period and will not result in an effect that would be considered irreversible.
X d	The Zone of Influence associated with the spread of invasive non-native species during the construction, operation or decommissioning phases of the project does not overlap with the Arun Valley SPA. Any invasive species colonising functionally linked land would be highly localised and occupy only a small fraction of the foraging habitat available within the Arun Valley.
X e	The Arun Valley SPA is over 3km away from any location that may be subject to permanent or temporary land take associated with the project. Although functionally linked land may be within the cable corridor it will only be affected temporarily during construction, and will only represent a small fraction of the grass and cropland available within the Arun Valley.
√f	Habitats that may be used by Bewick's swan from the Arun Valley for foraging are present within the Scoping Boundary. The activities during the construction and operational phases could fragment the habitat resulting in displacement of foraging individuals.
X g	Habitats that may be used by Bewick's swan for foraging are present within the Scoping Boundary, however during the operational period all infrastructure within functionally linked land will be below the surface; thereby avoiding fragmentation.
X h	Habitats that may be used by the non-breeding waterfowl assemblage for foraging are within the Scoping Boundary, although are remote from all cable route substation options. As construction, operation or decommssioning activities will not be occurring within the potentail functionally linked land of this feature no likely significant effect is identified.
√i	Construction and decommissioning activities will result in increases in noise and vibration across functionally linked land of the designated features of the Arun Valley SPA. This could potentially result in the disturbance and displacement of foraging individuals.
X j	Operational activities will not result in increases in noise and vibration across functionally linked land of the designated features of the Arun Valley SPA as the infrastructure will be buried.
X k	Lighting of construction and decommissioning activities will not result in a likely significant effect on the designated features of the Arun Valley SPA as it will be highly localised (the widest effects associated with vehicle headlights) in an area with an abundance of potential foraging areas. Further Bewick's swan typically feeds during the day.
X l	The cable route will not be lit during the operational phase, and the substation location (which will have security lighting) will be in excess of 10km from the Arun Valley SPA and therefore not in an area that could be considered functionally linked.
√m	The extent of the likely signficant effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for the project alone.

HRA Screening Matrix 3: Arun Valley (UK) SAC

Name of European site:	**Arun Valley (UK) SAC**																												
EU Code:	**UK0030366**																												
Distance to Project:	**2.8 km from Onshore cable corridor**																												
Likely Effects of Project																													
Effect	**Changes in hydrology**			**Pollution events**			**Emissions to air**			**INNS**			**Land take / land cover change**			**Fragmentation or severance of habitats**			**Noise and vibration**			**Increased light levels**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Ramshorn snail	×a	×a	×a	×b	×b	×b	×c	×c	×c	×d	×d	×d	×e	×e	×e										×f	×f	×f

Evidence supporting conclusions:

×a	The Arun Valley SAC is not within the Zone of Influence associated with the potential changes in hydrology; the population of ramshorn snail associated with the SAC is also restricted in mobility and will therefore not access functionally linked land within the ZOI either.
×b	The Arun Valley SAC is not within the Zone of Influence associated with the potential pollution events; the population of ramshorn snail associated with the SAC is also restricted in mobility and will therefore not access functionally linked land within the ZOI either.
×c	The Arun Valley SAC is not within 200m of the Scoping Boundary and is therefore is outside the Zone of Influence for emissions associated with vehicles or plant installing, maintaining or decommissioning the proposed infrastructure. The Arun Valley SAC is also not within 200m of roads that are likely to be used by traffic associated with construction or decommissioning activity. Any vehicles on roads within 200m that are associated with the project will be small in number, will take place over a temporary period and will not result in an effect that would be considered irreversible.
×d	The Zone of Influence associated with the spread of invasive non-native species during the construction, operation or decommissioning phases of the project does not overlap with the Arun Valley SAC.
×e	The Arun Valley SAC is over 3km away from any location that may be subject to permanent or temporary land take associated with the project.
×f	The project will not contribute towards in-combination effects on the Arun Valley SAC due to the nature of the designated feature and the geographic separation between any project infrastructure and the SAC boundary.

HRA Screening Matrix 4: The Mens (UK) SAC

Name of European site:	**The Mens (UK) SAC**
EU Code:	**UK0012716**
Distance to Project:	**11 km from Onshore cable corridor**
Likely Effects of Project	

Effect	**Changes in hydrology**			**Pollution events**			**Emissions to air**			**INNS**			**Land take / land cover change**			**Fragmentation or severance of habitats**			**Noise and vibration**			**Increased light levels**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Atlantic acidophilous beech forests with Ilex and sometimes Taxus in the shrub layer (Quercion robori-petraeae or Ilici-Fagenion)	✗a	✗a	✗a	✗b	✗b	✗b	✗c	✗c	✗c	✗d	✗d	✗d	✗e	✗e	✗e										✗k	✗k	✗k
Barbastelle	✗a	✗a	✗a	✗b	✗b	✗b	✗c	✗c	✗c	✗d	✗d	✗d	✗e	✗e	✗e	✓f	✗g	✓f	✗h	✗h	✗h	✓i	✗j	✗i	✓l	✓l	✓l

Evidence supporting conclusions:

✗a	The Mens SAC lies outside of the ZOI. Potential changes to foraging habitat for barbastelle is discounted due to the wide range of habitats favoured (e.g. riparian zones, woodlands, hedgerow, field margins etc. (Zeal, Davidson-Watts & Jones, 2012), including those that are not GWDTE
✗b	The Zone of Influence associated with the loss of pollutants during the construction, operation or decommissioning phases of the project does not overlap with the Mens SAC, therefore no direct effects on the designated site are predicted. Although functionally linked land could be affected, the areas would be highly localised and small in extent and would represent only a small fraction of available foraging habitat for barbastelle in the area, and would be towards the limits of their typical foraging range.
✗c	The Mens SAC is not within 200m of the Scoping Boundary. Roads within 200m of the SAC boundary includes the A272, however this is unlikely to carry construction traffic as it is on an east/west route on the opposite side of the Arun Valley than the cable route. Even should small amounts of construction traffic access these roads the emissions can be discounted as the increase in traffic will be temporary and limited ensuring that the extent of the effect will be low, temporary and reversible.
✗d	The Zone of Influence associated with the spread of invasive non-native species during the construction, operation or decommissioning phases of the project does not overlap with the Mens SAC.
✗e	The Mens SAC is over 11km away from any location that may be subject to permanent or temporary land take associated with the project.
✓f	The Mens SAC is within 12km of areas that may be subject to construction and decommissioning activities; within this area are habitats that barbastelle from the SAC could forage across; these are therefore assumed to be functionally linked and could be fragmented by the works.
✓g	Habitats that may be used by barbastelle for foraging are present within the Scoping Boundary, however during the operational period all infrastructure within functionally linked land will be below the surface; thereby avoiding fragmentation.
✗h	Noisy activities associated with the project will not take place close to The Mens SAC and will therefore not disturb roosting barbastelle. The majority of construction and decommissioning activities will be undertaken during the daytime when bats are not present, and operational noise will be limited, and largely associated with the substation that is well in excess of 12km away from the SAC.
✓i	Barbastelle are sensitive to lighting and could potentially forage across the areas that may require to be lit for construction and decommissioning purposes, leading to displacement.
✗j	Areas within 12km of the Mens SAC will not be lit during the operational phase, as all infrastructure will be below ground.
✗k	No likely significant effects are identified for the habitat feature of the Mens SAC due to the distance of the designation boundary from areas directly affected by the project. Therefore, in-combination effects can be discounted.
✓l	The extent of the likely signficant effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for the project alone.

HRA Screening Matrix 5: Duncton to Bignor Escarpment (UK) SAC

Name of European site:	**Duncton to Bignor Escarpment (UK) SAC**
EU Code:	**UK0030113 8**
Distance to Project:	**6.5 km from Onshore cable corridor**
Likely Effects of Project	

Effect	**Changes in hydrology**			**Pollution events**			**Emissions to air**			**INNS**			**Land take / land cover change**			**Fragmentation or severance of habitats**			**Noise and vibration**			**Increased light levels**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Asperulo-Fagetum beech forests	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe										Xf	Xf	Xf

Evidence supporting conclusions:

Xa	The Duncton to Bignor Escarpment SAC is not within the Zone of Influence associated with the potential changes in hydrology.
Xb	The Duncton to Bignor Escarpment SAC is not within the Zone of Influence associated with the potential pollution events.
Xc	The Duncton to Bignor Escarpment SAC is not within 200m of the Scoping Boundary and is therefore is outside the Zone of Influence for emissions associated with vehicles or plant installing, maintaining or decommissioning the proposed infrastructure. Roads within 200m of the SAC include the A285, however this is unlikely to carry construction traffic as it is a route into Chichester town centre. Even should small amounts of construction traffic access these roads the emissions can be discounted as the increase in traffic will be temporary and limited ensuring that the extent of the effect will be low, temporary and reversible.
Xd	The Duncton to Bignor Escarpment SAC is not within 200m of the Scoping Boundary and is therefore is outside the Zone of Influence for emissions associated with vehicles or plant installing, maintaining or decommissioning the proposed infrastructure. Roads within 200m of the SAC include the A285, however this is unlikely to carry construction traffic as it is a route into Chichester town centre. Even should small amounts of construction traffic access these roads the emissions can be discounted as the increase in traffic will be temporary and limited ensuring that the extent of the effect will be low, temporary and reversible.
Xe	The Duncton to Bignor Escarpment SAC is not within 200m of the Scoping Boundary and is therefore is outside the Zone of Influence for emissions associated with vehicles or plant installing, maintaining or decommissioning the proposed infrastructure. Roads within 200m of the SAC include the A285, however this is unlikely to carry construction traffic as it is a route into Chichester town centre. Even should small amounts of construction traffic access these roads the emissions can be discounted as the increase in traffic will be temporary and limited ensuring that the extent of the effect will be low, temporary and reversible.
Xf	The Duncton to Bignor Escarpment SAC is not within 200m of the Scoping Boundary and is therefore is outside the Zone of Influence for emissions associated with vehicles or plant installing, maintaining or decommissioning the proposed infrastructure. Roads within 200m of the SAC include the A285, however this is unlikely to carry construction traffic as it is a route into Chichester town centre. Even should small amounts of construction traffic access these roads the emissions can be discounted as the increase in traffic will be temporary and limited ensuring that the extent of the effect will be low, temporary and reversible.

HRA Screening Matrix 6: Pagham Harbour (UK) Ramsar (onshore only)

Name of European site:	**Pagham Harbour (UK) Ramsar (onshore only)**
EU Code:	**UK11052**
Distance to Project:	**10km from Onshore cable corridor**
Likely Effects of Project	

Effect	**Changes in hydrology**			**Pollution events**			**Emissions to air**			**INNS**			**Land take / land cover change**			**Fragmentation or severance of habitats**			**Noise and vibration**			**Increased light levels**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Dark-bellied brent goose	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe	Xf	Xf	Xf	Xg	Xg	Xg	Xh	Xh	Xh	Xi	Xi	Xi
Black-tailed godwit	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe	Xf	Xf	Xf	Xg	Xg	Xg	Xh	Xh	Xh	Xi	Xi	Xi

Evidence supporting conclusions:

Xa	The Pagham Harbour Ramsar site is not within the Zone of Influence associated with the potential changes in hydrology; functionally linked land for black-tailed godwit is not present within the ZOI; dark-bellied brent geese functionally linked land is also unlikely to be affected as the Scoping Boundary is at the edge of their foraging range, and any infrastructure is likely to be, at least several hundred metres, further away from the Ramsar site boundary.
Xb	The Pagham Harbour Ramsar site is not within the Zone of Influence associated with the potential pollution events; functionally linked land for black-tailed godwit is not present within the ZOI; dark-bellied brent geese functionally linked land is also unlikely to be affected as the Scoping Boundary is at the edge of their foraging range, and any infrastructure is likely to be, at least several hundred metres, further away from the Ramsar site boundary.
Xc	The Pagham Harbour Ramsar site is not within 200m of the Scoping Boundary and is therefore is outside the Zone of Influence for emissions associated with vehicles or plant installing, maintaining or decommissioning the proposed infrastructure. The Pagham Harbour Ramsar site is also not within 200m of roads that are likely to be used by traffic associated with construction, operation or decommissioning activity. Any vehicles on roads within 200m that are associated with the project will be small in number, will take place over a temporary period and will not result in an effect that would be considered irreversible.
Xd	The Zone of Influence associated with the spread of invasive non-native species during the construction, operation or decommissioning phases of the project does not overlap with the Pagham Harbour Ramsar site.
Xe	The Pagham Harbour Ramsar site is over 10km away from any location that may be subject to permanent or temporary land take associated with the project.
Xf	Functionally linked land for black-tailed godwit of the Pagham Harbour Ramsar site is not present within any areas through which infrastructure could be installed (i.e shallow inland waters would be avoided); dark-bellied brent geese functionally linked land is also unlikely to be affected as the Scoping Boundary is at the edge of their foraging range, and any infrastructure is likely to be, at least several hundred metres, further away from the Ramsar site boundary.
Xg	Functionally linked land for black-tailed godwit of the Pagham Harbour Ramsar site is not present within any areas through which infrastructure could be installed and will therefore not be subject to disturbance; dark-bellied brent geese functionally linked land is also unlikely to be affected as the Scoping Boundary is at the edge of their foraging range, and any infrastructure is likely to be, at least several hundred metres, further away from the Ramsar site boundary.
Xh	Functionally linked land for black-tailed godwit of the Pagham Harbour Ramsar site is not present within any areas through which infrastructure could be installed and will therefore not be subject to any additional lighting; dark-bellied brent geese functionally linked land is also unlikely to be affected as the Scoping Boundary is at the edge of their foraging range, and any infrastructure is likely to be, at least several hundred metres, further away from the Ramsar site boundary.
Xi	The extent of the likely signficant effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for the project alone.

HRA Screening Matrix 7: Pagham Harbour (UK) SPA (onshore only)

Name of European site:	**Pagham Harbour (UK) SPA (onshore only)**
EU Code:	**UK9012041A**
Distance to Project:	**10 km from Onshore cable corridor**
Likely Effects of Project	

Effect	**Changes in hydrology**			**Pollution events**			**Emissions to air**			**INNS**			**Land take / land cover change**			**Fragmentation or severance of habitats**			**Noise and vibration**			**Increased light levels**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern																											
Dark-bellied brent goose	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe	Xf	Xf	Xf	Xg	Xg	Xg	Xh	Xh	Xh	Xi	Xi	Xi
Litte tern																											
Ruff																											

Evidence supporting conclusions:

Xa	The Pagham Harbour SPA is not within the Zone of Influence associated with the potential changes in hydrology; dark-bellied brent geese functionally linked land is unlikely to be affected as the Scoping Boundary is at the edge of their foraging range, and any infrastructure is likely to be, at least several hundred metres, further away from the SPA boundary.
Xb	The Pagham Harbour SPA is not within the Zone of Influence associated with the potential pollution events; dark-bellied brent geese functionally linked land is unlikely to be affected as the Scoping Boundary is at the edge of their foraging range, and any infrastructure is likely to be, at least several hundred metres, further away from the SPA boundary.
Xc	The Pagham Harbour SPA is not within 200m of the Scoping Boundary and is therefore is outside the Zone of Influence for emissions associated with vehicles or plant installing, maintaining or decommissioning the proposed infrastructure. The Pagham Harbour SPA is also not within 200m of roads that are likely to be used by traffic associated with construction, operation or decommissioning activity. Any vehicles on roads within 200m that are associated with the project will be small in number, will take place over a temporary period and will not result in an effect that would be considered irreversible.
Xd	The Zone of Influence associated with the spread of invasive non-native species during the construction, operation or decommissioning phases of the project does not overlap with the Pagham Harbour SPA.
Xe	The Pagham Harbour SPA is over 10km away from any location that may be subject to permanent or temporary land take associated with the project.
Xf	Functionally linked land for dark-bellied brent geese is unlikely to be affected as the Scoping Boundary is at the edge of their foraging range, and any infrastructure is likely to be, at least several hundred metres, further away from the SPA boundary.
Xg	Functionally linked land for dark-bellied brent geese is unlikely to be affected as the Scoping Boundary is at the edge of their foraging range, and any infrastructure is likely to be, at least several hundred metres, further away from the SPA boundary.
Xh	Functionally linked land for dark-bellied brent geese is unlikely to be affected as the Scoping Boundary is at the edge of their foraging range, and any infrastructure is likely to be, at least several hundred metres, further away from the Ramsar site boundary.
Xi	The extent of the likely signficant effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for the project alone.

HRA Screening Matrix 8: Solent Maritime (UK) SAC

Name of European site:	**Solent Maritime (UK) SAC**																					
EU Code:	**UK0030059**																					
Distance to Project:	**15.7 km to Array**																					
Likely Effects of Project																						
Effect	**Suspended sediment and deposition**			**Physical habitat loss and disturbance**			**Invasive Non Native Species**			**Physical processes**			**Pollution**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Estuaries	✓a	✕b	✓a				✓d	✕e	✓d		✓f		✕g	✕g	✕g	✕h	✕h	✕h
Spartina swards	✓a	✕b	✓a				✓d	✕e	✓d		✓f		✕g	✕g	✕g	✕h	✕h	✕h
Atlantic salt meadows	✓a	✕b	✓a				✓d	✕e	✓d		✓f		✕g	✕g	✕g	✕h	✕h	✕h
Sandbanks which are slightly covered by sea water all the time	✓a	✕b	✓a				✓d	✕e	✓d		✓f		✕g	✕g	✕g	✕h	✕h	✕h
Mudflats and sandflats not covered by seawater at low tide	✓a	✕b	✓a				✓d	✕e	✓d		✓f		✕g	✕g	✕g	✕h	✕h	✕h
Coastal lagoons	✓a	✕b	✓a				✓d	✕e	✓d		✓f		✕g	✕g	✕g	✕h	✕h	✕h
Salicornia and other annuals colonizing mud and sand	✓a	✕b	✓a				✓d	✕e	✓d		✓f		✕g	✕g	✕g	✕h	✕h	✕h
Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")																	✕h	
Desmoulin's whorl snail																		

Evidence supporting conclusions:

✓a	The habitats and communities associated with this feature are sensitive to sediment deposition and changes to the sedimentary regime. Sediment plumes would be transient and, noting the distance of this site from the source of sediment disturbances, levels are not Sediment mobilisation during operation and maintenance activities would be localised and intermittent in nature. In view of this, the distance of this site from the Scoping Boundary and the significant potential for dilution and dispersion in the open coastal environment, LSEs effects are considered de minimis and LSE (from pathway acting alone) is therefore discounted.
✕b	There is no direct physical overlap with the Scoping Boundary and this SAC. LSE is therefore discounted.
✕c	The risk to this site is considered to be low due to incidental legislative controls over the introduction and spread of INNS. A number of measures and best practice approaches will be implemented to reduce the potential risk and consequences of INNS introduction and spread. This pathway will be considered at Stage 2 of the HRA due to the application of mitigation to ensure compliance with Sweetman.
✓d	Turbine foundations and cable protection could create enhanced habitat for INNS if this habitat were to provide a sink for particles dispersing from an existing site/source (the 'stepping stone' effect), thereby increasing the risk to habitats and ecosystems within this SAC. Existing offshore wind farms (e.g. within the North Sea) provide no evidence for the viability of this pathway. LSE (from pathway acting alone) is therefore discounted.
✕e	Changes to physical processes are expected to be small scale and localised in nature with no implications for the habitats within this SAC. On present information, however, LSE cannot be discounted without further clarification concerning about physical processes and how the presence of array structures and/ or sub-surface cables could influence the rate of erosion and deposition of sediment and / or prompt changes in water movement (e.g. to wave action).
✓f	The project has very low potential to generate emissions to the marine environment during the construction and maintenaince activities proposed. Further applying professional judgement about the nature of the receiving environment, it is anticipated that contamination would be subject to significant dilution and quickly dispisated to non-harmful levels in the open coastal environment. LSE (from pathway acting alone) is therefore discounted.
✕g	The magnitude of the potential LSE identified could act in-combination with other plans and projects, resulting in a greater level of impact than for Rampion 2 alone. These pathways may be considered at Stage 2. No in-combination issues are identified through the amalgamation of non-significant effects.
✕h	

HRA Screening Matrix 9: South Wight Maritime (UK) SAC

Name of European site:	**South Wight Maritime (UK) SAC**																			
EU Code:	**UK0030061**																			
Distance to Project:	**20.5 km to Array**																			
Likely Effects of Project																				
Effect	**Suspended sediment and deposition**			**Physical habitat loss and disturbance**			**Invasive Non Native Species**			**Physical processes**			**pollution**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Reefs	✓a	✗b	✓a	✗c	✗c	✗c	✓d	✗e	✓d		✓f		✗g	✗g	✗g	✗h	✗h	✗h
Vegetated sea cliffs of the Atlantic and Baltic Coasts	✓a	✗b	✓a	✗c	✗c	✗c	✓d	✗e	✓d		✓f		✗g	✗g	✗g	✗h	✗h	✗h
Submerged or partially submerged sea caves	✓a	✗b	✓a	✗c	✗c	✗c	✓d	✗e	✓d		✓f		✗g	✗g	✗g	✗h	✗h	✗h

Evidence supporting conclusions:

✓a	The habitats and communities associated with this feature are sensitive to sediment deposition and changes to the sedimentary regime. Sediment plumes would be transient and, noting the distance of this site from the source of sediment disturbances, levels are not expected to exceed background suspended sediment concentrations typical in estuaries and significant impacts are not envisaged. LSE cannot be discounted, however, without further information to clarify the likely disposition rates on the intertidal areas of this site.
✗b	Sediment mobilisation during operation and maintainance activities would be localised and intermittent in nature. In view of this, the vast distance of this site from the Scoping Boundary and the significant potential for dilution and dispersion in the open coastal environment, effects are considered *de minimis* and LSE (from pathway acting alone) is therefore discounted. No further assessment required.
✗c	There is no direct physical overlap with the Scoping Boundary and this SAC. LSE is therefore discounted.
✓d	The risk to this site is considered to be low due to incidental legislative controls over the introduction and spread of INNS. A number of measures and best practice approaches will be implemented to reduce the potential risk and consequences of INNS introduction and spread. This pathway will be considered at Stage 2 of the HRA due to the application of mitigation to ensure compliance with Sweetman.
✗e	Turbine foundations and cable protection could create enhanced habitat for INNS if this habitat were to provide a sink for particles dispersing from an existing site/source (the 'stepping stone' effect), thereby increasing the risk to habitats and ecosystems within this SAC. Existing offshore wind farms (e.g. within the North Sea) provide no evidence for the viability of this pathway. LSE (from pathway acting alone) is therefore discounted
✓f	Changes to physical processes are expected to be small scale and localised in nature with no implications for the habitats within this SAC. On present information, however, LSE cannot be discounted without further clarification concerning about physical processes and how the presence of array structures and/ or sub-surface cables could influence the rate of erosion and deposition of sediment and / or prompt changes in water movement (e.g. to wave action).
✗g	The project has very low potential to generate emissions to the marine environment during the construction and maintenaince activities proposed. Further applying professional judgement about the nature of the receiving environment, it is anticipated that contamination would be subject to significant dilution and quickly dispisated to non-harmful levels in the open coastal environment. LSE (from pathway acting alone) is therefore discounted.
✗h	The magnitude of the potential LSE identified could act in-combination with other plans and projects, resulting in a greater level of impact than for Rampion 2 alone. These pathways may be considered at Stage 2. No in-combination issues are identified through the amalgamation of non-significant effects.

HRA Screening Matrix 9A: Solent and Isle of Wight lagoons SAC (UK) UK0017073

Name of European site:	**Solent and Isle of Wight lagoons SAC**																			
EU Code:	**UK0017073**																			
Distance to Project:	**30.0 km to Array**																			
Likely Effects of Project																				
Effect	**Suspended sediment and deposition**			**Physical habitat loss and disturbance**			**Invasive Non Native Species**			**Physical processes**			**pollution**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Costal lagoon* priority feature	✓a	✕b	✓a	✕c	✕c	✕c	✓d	✕e	✓d		✓f		✕g	✕g	✕g	✕h	✕h	✕h

Evidence supporting conclusions:

✓a	The habitats and communities associated with this feature are sensitive to sediment deposition and changes to the sedimentary regime. Sediment plumes would be transient and, noting the distance of this site from the source of sediment disturbances, levels are not expected to exceed background suspended sediment concentrations typical in estuaries and significant impacts are not envisaged. LSE cannot be discounted, however, without further information to clarify the likely disposition rates on the intertidal areas of this site.
✕b	Sediment mobilisation during operation and maintainance activities would be localised and intermittent in nature. In view of this, the vast distance of this site from the Scoping Boundary and the significant potential for dilution and dispersion in the open coastal environment, effects are considered *de minimis* and LSE (from pathway acting alone) is therefore discounted. No further assessment required.
✕c	There is no direct physical overlap with the Scoping Boundary and this SAC. LSE is therefore discounted.
✓d	The risk to this site is considered to be low due to incidental legislative controls over the introduction and spread of INNS. A number of measures and best practice approaches will be implemented to reduce the potential risk and consequences of INNS introduction and spread. This pathway will be considered at Stage 2 of the HRA due to the application of mitigation to ensure compliance with Sweetman.
✕e	Turbine foundations and cable protection could create enhanced habitat for INNS if this habitat were to provide a sink for particles dispersing from an existing site/source (the 'stepping stone' effect), thereby increasing the risk to habitats and ecosystems within this SAC. Existing offshore wind farms (e.g. within the North Sea) provide no evidence for the viability of this pathway. LSE (from pathway acting alone) is therefore discounted
✓f	Changes to physical processes are expected to be small scale and localised in nature with no implications for the habitats within this SAC. On present information, however, LSE cannot be discounted without further clarification concerning about physical processes and how the presence of array structures and/ or sub-surface cables could influence the rate of erosion and deposition of sediment and / or prompt changes in water movement (e.g. to wave action).
✕g	The Proposed Development has very low potential to generate emissions to the marine environment during the construction and maintenaince activities proposed. Further applying professional judgement about the nature of the receiving environment, it is anticipated that contamination would be subject to significant dilution and quickly dispisated to non-harmful levels in the open coastal environment. LSE (from pathway acting alone) is therefore discounted.
✕h	The magnitude of the potential LSE identified could act in-combination with other plans and projects, resulting in a greater level of impact than for Rampion 2 alone. These pathways may be considered at Stage 2. No in-combination issues are identified through the amalgamation of non-significant effects.

HRA Screening Matrix 10: Littoral Cauchois (FR) SAC

Name of European site:	**Littoral Cauchois (FR) SAC**																														
EU Code:	**FR2310045**																														
Distance to Project:	**94.4 km to Array**																														
Likely Effects of Project																															
Effect	**Underwater noise**			**Vessel disturbance**			**Audio / visual disturbance (above surface)**			**Collision risk**			**Effects on prey**			**Pollution**			**Suspended sediment and deposition**			**EMF**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Grey seal	×a	×b	√c	×d	×d	×d	×e	×e	×e	×d	×d	×d	√f	√f	√f	×g	×g	×g	×h	×h	×h		×i		×k	×k	×k
River lamprey	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l
Sea lamprey	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l
Shad	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l
River lamprey	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l	×l
Freshwater sculpin																											
Southern Coenagrion																											
Jersey tiger																											
Stag beetle																											
Barbastelle bat																											
Bechstein's bat																											
Great crested newt																											
Geoffroy's bat																											
Reefs																											
Perennial vegetation of stony banks																											
Vegetated sea cliffs of the Atlantic and Baltic Coasts																											
Oligotrophic waters containing very few minerals of sandy plains																											
Hard oligo-mesotrophic waters with benthic vegetation of Chara spp																											
Natural eutrophic lakes with Magnopotamion or Hydrocharition -type																											
Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix																											
European dry heaths																											
Molinia meadows on calcareous, peaty or clayey-silt-laden soils																											

Hydrophilous tall herb fringe communities of plains and of the montane																									
Lowland hay meadows																									
Petrifying springs with tufa formation																									
Alkaline fens																									
Caves not open to the public																									
Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the																									
Asperulo-Fagetum beech forests																									
Tilio-Acerion forests of slopes, screes and ravines																									
Old acidophilous oak woods with Quercus robur on sandy plains																									
Alluvial forests with Alnus glutinosa and Fraxinus excelsior																									

Evidence supporting conclusions:

Xa	Exposure to noise and vibration during construction activities could result in permanent or temporary effects, ranging from physical injury, auditory injury and behavioural response. As this SAC is located within foraging range of grey seal, it is concluded there is potential for LSE (from pathway acting alone and in combination)
Xb	Low-level, localised noise from wind turbine generators and operational and maintenance vessel traffic is likely to be of negligible consequence in the context of background levels generated by shipping and human activities in the area and unlikely to produce a significant behavioural response, or exclusion from important habitat that is located principally within the confines of the SAC. Reports of seals regularly entering wind farms to forage at individual turbines is testament to their indifference to operations (O'Leary, 2014). LSE (from pathway acting alone) is therefore discounted.
✓c	The potential for LSE during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase.
Xd	The likelihood that a seal from this SAC is present within the Scoping Boundary and the significance of effects at population level are considered to decrease with distance and the severity of the effect experienced locally. Given the high vessel density surrounding the Scoping Boundary increases in vessel movements during construction are not considered significant. As this site is located over 70km from the Scoping boundary, the risk of injury or mortality and the implicaitons of local disturbance is considered low and non-significant. LSE is therefore discounted.
Xe	Seals hauled-out or surfaced adjacent to works could experience unfamiliar noise and or visual stimuli offshore (e.g. in-water infrastructure, machinery and people or lighting). The implications of disturbance and potential temporary exclusion from the area within, or adjacent to the Scoping Boundary would negligible within the context of vast areas of unaffected habitat available and the absence of important habitat within the project's Zone of Influence (e.g. haul-outs or breeding sites). LSE (from pathway acting alone) is therefore discounted.
Xf	This pathway to indirect effects due to insufficient prey resource is weak for this highly-mobile receptor (and adaptive diet) and countered by reports of seals regularly entering operational wind farms to forage (O'Leary, 2014). The temporary and low-impact effects are anticiapted for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support seal populations. LSE (from pathway acting alone) is therefore discounted.
Xg	The liklihood that a seal from this SAC is present within the Scoping Boundary and the signficance of effects at population level are considered to decrease with a) distance and b) the severity of the effect experienced locally. Project activities and plant have limited potential to generate emissions to the marine environment. Further applying professional judgement about the nature of the receiving environment, contaminants would be subject to significant dilution and dispersion in the open coastal environment. LSEs from accidental pollution are not anticipated. LSE (from pathway acting alone) is therefore discounted.
Xh	Grey seals occur naturally in turbid environments. The potential level, extent and duration of any increase in suspended sediment would be negligible as regards the ecology of the species and the proximity of this designated site. LSE (from pathway acting alone) is therefore discounted.
Xi	EMF may be emitted from the submarine circuits into the water, but is predicted to be of minor significance based on studies on the potential effects of EMF generated by wind farm submarine cables that (e.g. (EirGrid, 2016)) have shown effects to be highly localised and non-significant
✓j	The potential for LSE to result from underwater noise sources potentially acting in combination will be addressed at HRA Stage 2. No other pathways are considered likely to amount to LSE in combination. This finding will be reviewed following detailed assessment of impacts at later stages of the application.
Xk	No in-combination issues are identified during operation and maintainance. It is determined that Project-related impacts to species from this site (over 70 km from the Scoping Boundary) would be *de minimis* to the extent impacts would not amount to a discernible contribution to adverse effects in-combination with other project activities, or external plans or projects.
Xl	Given the extent of physical effects associated with the construction of the project it is considered that the potential for significant effect to the habitats of the migratory fish is negligible.

HRA Screening Matrix 11: Southern North Sea (UK) SAC

Name of European site:	**Southern North Sea (UK) SAC**																														
EU Code:	**UK0030395**																														
Distance to Project:	**127.7 km to Array**																														
Likely Effects of Project																															
Effect	**Underwater noise**			**Vessel disturbance**			**Collision risk**			**Effects on prey**			**Pollution**			**Suspended sediment and deposition**			**Physical habitat loss and disturbance**			**EMF**			**In-combination effects**					
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**			
Harbour porpoise	Xa	Xa	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe	Xf	Xf	Xf	Xg	Xg	Xg	Xh	Xh	Xh			

Evidence supporting conclusions:

Xa	The range applied to UK harbour porpoise sites for assessing this effect is 26 km. As this SAC does not fall within that range it is determined there is no potential for LSE.
Xb	The significance of effects at population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. Given the high vessel density in the area surrounding the Scoping Boundary, the relatively small increases in vessel movements during construction and operation and maintenance are not considered significant. As this site is located over 125km from the Scoping boundary, the risk of significant injury, mortality or disturbance from vessels is considered low. LSE is therefore discounted.
Xc	This pathway to indirect effects due to insufficient prey resource is weak for this highly-mobile receptor (with adaptive diet). Only temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, and in view of the considerable expanse of alternative habitat available, there would continue to be sufficient prey resource available to support harbour porpoise from this SAC. LSE (from pathway acting alone) is therefore discounted.
Xd	The project has very low potential to generate emissions to the marine environment during the construction, operation and maintenance activities proposed. Further applying professional judgement about the nature of the receiving environment, it is anticipated that contamination would be subject to significant dilution and quickly dissipated to non-harmful levels in the open coastal environment. The risk of population level impacts to this SAC located over 125 km from the source of ay pollutants is negligible. LSE (from this pathway acting alone) is therefore discounted.
Xe	As cetacaens often reside in turbid waters, The potential level, extent and duration of any increase in suspended sediment would be negligible as regards the ecology of the species and the proximity of this designated site.LSE (from this pathway acting alone) is therefore discounted.
Xf	The small amount of direct habitat lost to accomodate project infrastruture (seabed and water coloumn) is considered *de minimis* to both the harbour porpoise within this SAC and its prey resources in the context of the vast extent of similar habitat still available. LSE (from this pathway acting alone) is therefore discounted.
Xg	EMF may be emitted from the submarine circuits into the water, but is predicted to be of minor significance based on studies on the potential effects of EMF generated by wind farm submarine cables that have shown effects to be highly localised and non-significant. LSE (from this pathway acting alone) is therefore discounted.
Xh	No in-combination issues are identified. Project-related impacts to species from this site (over 125 km from the Scoping Boundary) would not amount to a discernible contribution to adverse effects in-combination with other project activities, or external plans or projects.

HRA Screening Matrix 12: Transboundary harbour porpoise sites

Name of European site:	**Transboundary harbour porpoise sites**																														
EU Code:	**Various**																														
Distance to Project:	**At least 100 km**																														
Likely Effects of Project																															
Effect	**Distance to Array (A) / Offshore Cable Corridor (O) (Km)**		**Underwater noise**			**Vessel disturbance**			**Collision risk**			**Effects on prey**			**Pollution**			**Suspended sediment and deposition**			**Physical disturbance (direct habitat loss)**			**EMF**			**In-combination effects**		
Stage of Development	**A**	**O**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Récifs et marais arrière-littoraux du Cap Lévi à la Pointe de Saire (FR) FR2500085	101.60	108.50	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Recifs Griz-Nez Blanc-Nez SAC (FR) FR3102003	103.40	137.20	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Baie de Canche et Couloir des trois estuaries SAC (FR) FR3102005	106.90	141.00	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Baie de Seine occidentale SAC (FR) FR2502020	114.90	122.00	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Baie de Seine orientale SAC (FR) FR2502021	126.10	134.90	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Bancs de Flandres SAC/SCI (FR) FR3102002	135.70	166.50	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Récifs et marais arrière-littoraux du Cap Lévi à la Pointe de Saire SAC / SCI	137.90	144.90	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Vlaamse Banken SAC (BE) BEMNZ0001	182.80	211.60	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
SBZ 1 / ZPS 1 (BE) BEMNZ0002	188.00	219.60	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
SBZ 2 / ZPS 2 (BE) BEMNZ0003	206.20	236.90	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
SBZ 3 / ZPS 3 (BE) BEMNZ0004	230.90	260.90	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Vlakte van de Raan SAC (BE) BEMNZ0005	241.10	270.40	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Noordzeekustzone SAC (NL) NL9802001	385.30	406.60	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Klaverbank SAC (NL) NL2008002	407.60	413.10	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Doggerbank SCI (UK) UK0030352	426.90	426.00	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Doggersbank SAC (NL) NL2008001	454.90	457.30	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Borkum-Riffgrund SCI (DE) DE2104301	554.00	572.70	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Nationalpark Niedersachsisches Wattenmeer SAC (DE)	560.10	579.90	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Sylter Aussenriff SCI (DE) DE1209301	641.80	654.00	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Helgoland mit Helgoländer Felssockel SAC (DE) DE1813391	661.90	681.10	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Steingrund SAC (DE) DE1714391	671.60	691.00	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc

Hamburgisches Wattenmeer SAC (DE) DE2016301	673.70	694.60	×a	×b	×a	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×c	×d	×c
NTP S-H Wattenmeer und angrenzende Kustengebiete SAC (DE) DE0916491	677.70	698.50	×a	×b	×a	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×c	×d	×c
Kosterfjorden-Väderöfjorden SAC (DE) SE0520170	1131.31	1139.79	×a	×b	×a	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×b	×c	×d	×c

Evidence supporting conclusions:

×a — Drawing on literature associated with the Southern North Sea SAC/SCI e.g. (JNCC, 2015), the range applied to the Screening assessment, within which significant effects from underwear noise might occur, is 26 km. This value (range) encompasses risk of injury (onset of Permanent Threshold Shift) and extends to address risk of habitat loss due to underwater noise driven disturbance. As this SAC does not fall within that range it is determined there is no potential for LSE.

×b — Each SAC is located over 100 km from the Array and Offshore cable corridor and well outside the project's Zone of Influence. Direct effects would not result to harbour porpoise when present within their respective SACs. Due to the mobility of cetaceans, however, impacts could manifest on individuals associated with this SAC population that have left the confines of their host site and are present within the project's sphere of influence. It is assumed that all SACs with potential connectivitity to the species known within the effect footprint of the Proposed Development have the theoretical potential to be affected. However, the likelihood that a feature from this SAC is a) present within project's effect footprint and b) the significance of effects to this SAC at population level are considered to decrease with a) distance, b) the severity of the effect experienced locally and c) apportionment to the other SACs within the species range. For this pathway, the severity of the effect experienced locally is considered to be low to negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distanceThis SAC is located over 100 km from the Array and Offshore cable corridor and well outside the project's Zone of Influence. Direct effects would not result to harbour porpoise when present within this SAC. Due to the mobility of cetaceans, however, impacts could manifest on individuals associated with this SAC population that have left the confines of their host site and are present within the project's sphere of influence. It is assumed that all SACs with potential connectivitity to the species known within the project's effect footprint have the theoretical potential to be affected. However, the likelihood that a feature from this SAC is a) present within project's effect footprint and b) the significance of effects to this SAC at population level are considered to decrease with a) distance, b) the severity of the effect experienced locally and c) apportionment to the other SACs within the species range. For this pathway, the severity of the effect experienced locally is considered to be low to negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance. The effect was considered and discounted for potential LSEfrom this pathway acting alone.

×c — No LSE in-combination are identified on current information. It is determined that project-related impacts over these scales would be small to the extent impacts would not likely amount to a discernible contribution to significant effects in-combination with other project related activities, or external plans or projects. This finding will be reviewed following detailed assessment of impacts at later stages of the application process.

HRA Screening Matrix 13: Transboundary bottlenose dolphin sites

Name of European site:	**Transboundary bottlenose dolphin sites**																														
EU Code:	**Various**																														
Distance to Project:	**At least 100 km**																														
Likely Effects of Project																															
Effect	**Distance to Array (A) / Offshore Cable Corridor (O) (Km)**		**Underwater noise**			**Vessel disturbance**			**Collision risk**			**Effects on prey**			**Pollution**			**Suspended sediment and deposition**			**Physical disturbance (direct habitat loss)**			**EMF**			**In-combination effects**		
Stage of Development	**A**	**O**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Récifs et marais arrière-littoraux du Cap Lévi à la Pointe de Saire	101.60	108.50	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Falaises du Cran aux Oeufs et du Cap Gris-Nez, Dunes du Chatelet, Marais de	115.00	148.60	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Récifs et landes de la Hague SAC/SCI (FR) FR2500084	125.60	132.10	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Baie de Seine orientale SAC (FR) FR2502021	126.10	134.90	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Anse de Vauville (FR) SAC/SCI (FR) FR2502019	135.70	142.20	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Banc et récifs de Surtainville (FR) FR2502018	150.10	156.70	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Chausey SAC (FR) FR2500079	188.40	195.30	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Nord Bretagne DH SAC/SCI (FR) FR2502022	194.80	200.50	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Cap d'Erquy-Cap Fréhel (FR) FR5300011	220.40	227.00	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Côte de Cancale à Paramé (FR) SAC FR5300052	224.20	231.20	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard (FR)	235.70	242.50	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Côte de Granit rose-Sept-Iles SAC (FR) FR5300009	257.80	264.00	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Abers - Côtes des légendes (FR) SAC/SCI FR5300017	345.00	351.10	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Ouessant-Molène SAC/ SCI (FR) FR5300018	376.10	382.10	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Chaussée de Sein SAC (FR) FR5302007	408.60	414.80	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Mers Celtiques - Talus du golfe de Gascogne SAC (FR) FR5302015	411.10	416.90	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa

Evidence supporting conclusions:

Xa — The broadscale marine mammal data available clearly shows that the eastern English Channel (east of the Isle of Wight to Dungeness) typically holds a relatively low density and diversity of cetacean species. While connectivity between Rampion 2 and these SACs is possible (via effects on a small number of individuals that enter the Zone of Influence), the significance of effects at population level to this SAC population is considered to decrease to non-significant levels with distance and no LSE is concluded on this basis and the low risk of exposure. Project-related impacts to species from these sites (all over 100 km from the Scoping Boundary) would be small to the extent impacts would not amount to a discernible contribution to significant effects, alone or in-combination.

HRA Screening Matrix 14: Grey seal sites

Name of European site:	**Grey seal sites**
EU Code:	**Various**
Distance to Project:	**Various**
Likely Effects of Project	

Effect	**Distance to Array (A) / Offshore Cable Corridor (O) (Km)**		**Underwater noise**			**Vessel disturbance**			**Audio / visual disturbance (above surface)**			**Collision risk**			**Effects on prey**			**Pollution**			**Suspended sediment and deposition**			**EMF**			**In-combination effects**		
Stage of Development	**A**	**O**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC / SCI (FR) FR3102004	73.6	107.6	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Littoral Cauchois SAC FR2300139	94.3829	116.951	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Récifs et marais arrière-littoraux du Cap Lévi à la Pointe de Saire (FR) FR2500085	101.6	108.5	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Recifs Griz-Nez Blanc-Nez SAC (FR) FR3102003	103.4	137.2	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Baie de Canche et Couloir des trois estuaries SAC (FR) FR3102005	106.9	141	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Estuaire de la Canche, dunes picardes plaquées sur l'ancienne falaise, forêt d'Hardelot et falaise d'Equihe SAC/SCI (FR) FR3100480	112.2	146.4	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Estuaires et littoral picards (baies de Somme et d'Authie) SAC / SCI (FR) FR2200346	114.6	148	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Baie de Seine occidentale SAC (FR) FR2502020	114.9	122	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Falaises du Cran aux Oeufs et du Cap Gris-Nez, Dunes du Chatelet, Marais de	115	148.6	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Marais du Cotentin et du Bessin - Baie des Veys SAC / SCI (FR) FR2500088	124.3	131.2	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Estuaire de la Seine SAC / SCI (FR) FR2300121	125.9	140.8	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Récifs et landes de la Hague SAC/SCI (FR) FR2500084	125.6	132.1	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Baie de Seine orientale SAC (FR) FR2502021	126.1	134.9	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Anse de Vauville (FR) SAC/SCI (FR) FR2502019	135.7	142.2	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Bancs de Flandres SAC/SCI (FR) FR3102002	135.7	166.5	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa

Evidence supporting conclusions:

×a	Evidence indicates grey seal at sea density in the immediate vicinity of Rampion 2 is low. E.g. Russell et al., 2017 (Updated Seal Usage Maps) present raw tagging and haul out data that indicate no usage of the English Channel by grey seal. There are no important habitats (e.g. haul-outs or breeding sites) within the Zone of Influence of Rampion 2. While connectivity between Rampion 2 and this SAC is possible (via effects on a small number of individuals that enter the Zone of Influence), the significance of effects at population level to this SAC population is considered to decrease to non-significant levels with distance and no LSE is concluded on this basis and the low risk of exposure. Project-related impacts to species from this site (over 90 km from the Scoping Boundary) would be de minimis to the extent impacts would not amount to a discernible contribution to adverse effects in-combination.

HRA Screening Matrix 15: Harbour seal sites

Name of European site:	**Harbour seal sites**																														
EU Code:	**Various**																														
Distance to Project:	**Various**																														
Likely Effects of Project																															
Effect	**Distance to Array (A) / Offshore Cable Corridor (O) (Km)**		**Underwater noise**			**Vessel disturbance**			**Audio / visual disturbance (above surface)**			**Collision risk**			**Effects on prey**			**Pollution**			**Suspended sediment and deposition**			**EMF**			**In-combination effects**		
Stage of Development	**A**	**O**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC / SCI (FR) FR3102004	73.6	107.6	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Récifs et marais arrière-littoraux du Cap Lévi à la Pointe de Saire (FR) FR2500085	101.6	108.5	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Recifs Griz-Nez Blanc-Nez SAC (FR) FR3102003	103.4	137.2	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Baie de Canche et Couloir des trois estuaries SAC (FR) FR3102005	106.9	141	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Estuaire de la Canche, dunes picardes plaquées sur l'ancienne falaise, forêt d'Hardelot et falaise d'Equihe SAC/SCI (FR) FR3100480	112.2	146.4	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Estuaires et littoral picards (baies de Somme et d'Authie) SAC / SCI (FR) FR2200346	114.6	148	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Baie de Seine occidentale SAC (FR) FR2502020	114.9	122	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa
Falaises du Cran aux Oeufs et du Cap Gris-Nez, Dunes du Chatelet, Marais de Tardinghen et Dunes de Wissan SAC/ SCI (FR) FR3100478	115.0	148.6	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa		Xa	Xa	Xa

Evidence supporting conclusions:

Xa	Evidence indicates that harbour seal at sea density in the immediate vicinity of Rampion 2 is low, with some usage by harbour seal around the Solent and surrounding harbours (Russell et al., 2017). Mean at sea usage (modelled) for harbour seals across the Rampion 2 study area is 0<1 animal/km2. Crucially, harbour seal tagging in French waters appears to show no connectivity to the UK (Vincent et al., 2017). As there are no SACs with foraging range for this species on the south England coast, the prospect of connectivity and significance effects on the population of these transboundary SACs (all over 73 km from the Scoping Boundary) is discounted. While connectivity between Rampion 2 and this SAC is theoretically possible (via effects on a small number of individuals that enter the Zone of Influence), the significance of effects at population level is further considered to decrease to non-significant levels with distance and the low risk of exposure (small numbers of animals present within the Zone of Influence). No LSE is concluded on this basis. Project-related impacts to species from this site (over 90 km from the Scoping Boundary) would be de minimis to the extent impacts would not amount to a discernible contribution to adverse effects in-combination.

HRA Screening Matrix 16: Solent and Dorest Coast (UK) SPA

Name of European site:	**Solent and Dorest Coast (UK) SPA**																			
EU Code:	**TBC**																			
Distance to Project:	**0.63 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Common tern		✓a		✓b		✓b		✓b			✕a		✕b	✕c	✕b	✕c	✕c	✕c		
Sandwich tern		✓a		✓b		✓b		✓b			✓d		✕b	✓e	✕b	✕c	✕c	✕c		
Little tern		✕d		✓b		✓b		✓b			✕a		✕b	✕c	✕b	✕c	✕c	✕c		

Evidence supporting conclusions:

✓a	Species has moderate vulnerability to collision risk (Bradbury *et al.* 2014) and array is located within mean maximum foraging range of this SPA for this species (Woodbury *et al.* 2019). LSE can therefore not be discounted at this stage.
✓b	Project component within 0.63km of SPA. LSE can therefore not be discounted at this stage.
✕a	These species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury *et al.* 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage.
✕b	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach et al, 2019). Therefore, LSE can be discounted at this stage.
✕c	Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury *et al.* (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
✕c	The magnitude of the potential LSE identified (collision risk, effects on prey and displacement) could act in-combination with other plans and projects, resulting in a greater level of impact than for Rampion 2 alone. These pathways will be considered at Stage 2. No in-combination issues are identified through the amalgamation of non-significant effects
✓d	Based on the proximity of the array to the breeding colony and the number of foraging trips required by terns per day during the chick rearing period (Masden *et al.*, 2010), an LSE cannot be discounted at this stage.
✕d	Array is beyond mean maximum foraging range for this species (Woodward *et al.* 2019). LSE can therefore be discounted at this stage.
✓e	This species has moderate vulnerability to displacement by offshore wind farms (Bradbury *et al.* 2014) with some evidence of weak avoidance from post-Construction monitoring (Dierschke, Furness & Garth, 2016). The array is within the mean-maximum foraging range for this species (Woodward *et al.* 2019). Therefore, LSE cannot be discounted at this stage.

HRA Screening Matrix 17: Pagham Harbour (UK) SPA

Name of European site:	**Pagham Harbour (UK) SPA**																			
EU Code:	**UK9012041**																			
Distance to Project:	**9.2 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Common tern		✓a		✓b		✓b		✓b			✕a		✕b	✕c	✕b	✕d	✕d	✕d		
Ruff																				
Little tern																				
Dark-bellied brent goose																				

Evidence supporting conclusions:

✓a	Species has moderate vulnerability to collision risk (Bradbury*et al.* 2014) and array is located within mean maximum foraging range of this SPA for this species (Woodbury*et al.* 2019). LSE can therefore not be discounted at this stage.
✓b	Project component within 10km of SPA. LSE can therefore not be discounted at this stage
✕a	These species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury*et al.* 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage
✕b	This species has very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al,* 2019). Therefore, LSE can be discounted at this stage.
✕c	Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbur *et al* . (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
✕d	The magnitude of the potential LSE identified (collision risk and effects on prey) could act in-combination with other plans and projects, resulting in a greater level of impact than for Rampion 2 alone. These pathways will be considered at Stage 2. No in-combination issues are identified through the amalgamation of non-significant effects

HRA Screening Matrix 18: Pagham Harbour (UK) Ramsar

Name of European site:	**Pagham Harbour (UK) Ramsar**																			
EU Code:	**UK11052**																			
Distance to Project:	**9.2 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Common tern		✓a		✓b		✓b		✓b			×a		×b	×c	×b	×d	×d	×d		
Ruff																				
Little tern																				
Dark-bellied brent goose																				

Evidence supporting conclusions:

- ✓a Species has moderate vulnerability to collision risk (Bradbury*et al.* 2014) and array is located within mean maximum foraging range of this SPA for this species (Woodbury*et al.* 2019). LSE can therefore not be discounted at this stage.
- ✓b Project component within 10km of SPA, LSE can therefore not be discounted at this stage
- ×a This species has low vulnerability to displacement (the result of avoidance behaviour) (Bradbury*et al.* 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage
- ×b This species has very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach et al, 2019). Therefore, LSE can be discounted at this stage
- ×c Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbur *et al* . (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
- ×d The magnitude of the potential LSE identified (collision risk and effects on prey) could act in-combination with other plans and projects, resulting in a greater level of impact than for Rampion 2 alone. These pathways will be considered at Stage 2. No in-combination issues are identified through the amalgamation of non-significant effects

HRA Screening Matrix 19: Chicester and Langstone Harbours (UK) SPA

Name of European site:	**Chicester and Langstone Harbours (UK) SPA**																		
EU Code:	**UK9011011**																		
Distance to Project:	**15.6 km from Offshore cable corridor**																		
Likely Effects of Project																			
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		×a		×b		×b		×b			×d		×e	×f	×e	×c	×c	×c
Sandwich tern		✓a		×b		×b		×b			✓b		×e	✓c	×e	×d	×d	×d
Common shelduck																		
Wigeon																		
Teal																		
Pintail																		
Shoveler																		
Red-breasted merganser																		
Ringed plover																		
Grey plover																		
Sanderling																		
Bar-tailed godwit																		
Curlew																		
Redshank																		
Turnstone																		
Little tern																		
Dunlin																		
Dark-bellied brent goose																		

Evidence supporting conclusions:

×a	These species have moderate vulnerability to collision risk with turbines (Bradbury *et al* . 2014). However, array is located beyond the mean maximum foraging range of these species (Woodward *et al* . 2019) from this site.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for these highly-mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms is of no LSE being concluded. Consequently, LSE can be discounted at this stage
×c	Unlikely for impacts to occour at an incombination level due to non pathway for effect at a project alone level.
×d	These species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury et al, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage.
×e	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al* . 2019). Therefore, LSE can be discounted at this stage.
×f	Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury et al, (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
✓a	This species has moderate vulnerability to collision risk with turbines (Bradbury et al, 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward et al, 2019) from this SPA. Therefore, LSE cannot be discounted at this stage.
✓b	Based on the proximity of Rampion 2 to the breeding colony and the number of foraging trips required by terns per day during the chick rearing period (Masden et al, 2010), an LSE cannot be discounted at this stage.
✓c	This species has moderate vulnerability to displacement by offshore wind farms (Bradbury et al, 2014) with some evidence of weak avoidance from post-Construction monitoring (Dierschke, Furness & Garth, 2016). Rampion 2 is within the mean-maximum foraging range for this species (Woodward et al, 2019). Therefore, LSE cannot be discounted at this stage.
×d	The magnitude of the potential LSE identified (collision risk, barrier effect and displacement) could act in-combination with other plans and projects, resulting in a greater level of impact than for Rampion 2 alone. These pathways will be considered at Stage 2. No in-combination issues are identified through the amalgamation of non-significant effects.

HRA Screening Matrix 20: Chicester and Langstone Harbours (UK) Ramsar

Name of European site:	**Chicester and Langstone Harbours (UK) Ramsar**
EU Code:	**UK11013**
Distance to Project:	**15.6 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		×a		×b		×b		×b			×d		×e	×f	×e	×c	×c	×c
Sandwich tern		✓a		×b		×b		×b			✓b		×e	✓c	×e	×d	×d	×d
Wigeon																		
Teal																		
Pintail																		
Shoveler																		
Red-breasted merganser																		
Ringed plover																		
Grey plover																		
Sanderling																		
Bar-tailed godwit																		
Curlew																		
Redshank																		
Turnstone																		
Shelduck																		
Little tern																		
Dunlin																		
Dark-bellied brent goose																		

Evidence supporting conclusions:

×a	These species have moderate vulnerability to collision risk with turbines (Bradbury *et al*. 2014). However, array is located beyond the mean maximum foraging range of these species (Woodward *et al*. 2019) from this site.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for these highly-mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms is of no LSE being concluded. Consequently, LSE can be discounted at this stage
×c	Unlikely for impacts to occour at an incombination level due to non pathway for effect at a project alone level.
×d	These species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury et al, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage.
×e	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al*. 2019). Therefore, LSE can be discounted at this stage.
×f	Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury et al, (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
✓a	This species has moderate vulnerability to collision risk with turbines (Bradbury et al, 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward et al, 2019) from this SPA. Therefore, LSE cannot be discounted at this stage.
✓b	Based on the proximity of Rampion 2 to the breeding colony and the number of foraging trips required by terns per day during the chick rearing period (Masden et al, 2010), an LSE cannot be discounted at this stage.
✓c	This species has moderate vulnerability to displacement by offshore wind farms (Bradbury et al, 2014) with some evidence of weak avoidance from post-Construction monitoring (Dierschke, Furness & Garth, 2016). Rampion 2 is within the mean-maximum foraging range for this species (Woodward et al, 2019). Therefore, LSE cannot be discounted at this stage.
×d	The magnitude of the potential LSE identified (collision risk, barrier effect and displacement) could act in-combination with other plans and projects, resulting in a greater level of impact than for Rampion 2 alone. These pathways will be considered at Stage 2. No in-combination issues are identified through the amalgamation of non-significant effects.

HRA Screening Matrix 21: Solent and Southampton Water (UK) SPA

Name of European site:	**Solent and Southampton Water (UK) SPA**
EU Code:	**UK9011061**
Distance to Project:	**28.3 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Sandwich tern		✓a		✕a		✕a		✕a			✓b		✕b	✓c	✕b	✕d	✕d	✕d
Ringed plover																		
Mediterranean gull																		
Teal																		
Roseate tern																		
Common tern																		
Little tern																		
Black-tailed godwit																		
Dark-bellied brent goose																		

Evidence supporting conclusions:

✓a	This species has moderate vulnerability to collision risk with turbines (Bradbury et al, 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward et al, 2019) from this SPA. Therefore, LSE cannot be discounted at this stage.
✕a	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for these highly-mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms is of no LSE being concluded. Consequently, LSE can be discounted at this stage
✓b	Based on the proximity of Rampion 2 to the breeding colony and the number of foraging trips required by terns per day during the chick rearing period (Masden et al, 2010), an LSE cannot be discounted at this stage.
✓c	This species has moderate vulnerability to displacement by offshore wind farms (Bradbury et al, 2014) with some evidence of weak avoidance from post-Construction monitoring (Dierschke, Furness & Garth, 2016). Rampion 2 is within the mean-maximum foraging range for this species (Woodward et al, 2019). Therefore, LSE cannot be discounted at this stage.
✕b	Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury et al, (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
✕d	The magnitude of the potential LSE identified (collision risk, barrier effect and displacement) could act in-combination with other plans and projects, resulting in a greater level of impact than for Rampion 2 alone. These pathways will be considered at Stage 2. No in-combination issues are identified through the amalgamation of non-significant effects.

HRA Screening Matrix 22: Solent and Southampton Water (UK) Ramsar

Name of European site:	**Solent and Southampton Water (UK) Ramsar**
EU Code:	**UK11063**
Distance to Project:	**28.3 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Sandwich tern		✓a		✕a		✕a		✕a			✓b		✕b	✓c	✕b	✓d	✓d	✓d
Ringed plover																		
Mediterranean gull																		
Teal																		
Roseate tern																		
Common tern																		
Little tern																		
Black-tailed godwit																		
Dark-bellied brent goose																		

Evidence supporting conclusions:

✓a	This species has moderate vulnerability to collision risk with turbines (Bradbury et al, 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward et al, 2019) from this SPA. Therefore, LSE cannot be discounted at this stage.
✕a	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for these highly-mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms is of no LSE being concluded. Consequently, LSE can be discounted at this stage
✓b	Based on the proximity of Rampion 2 to the breeding colony and the number of foraging trips required by terns per day during the chick rearing period (Masden et al, 2010), an LSE cannot be discounted at this stage.
✓c	This species has moderate vulnerability to displacement by offshore wind farms (Bradbury et al, 2014) with some evidence of weak avoidance from post-Construction monitoring (Dierschke, Furness & Garth, 2016). Rampion 2 is within the mean-maximum foraging range for this species (Woodward et al, 2019). Therefore, LSE cannot be discounted at this stage.
✕b	Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury et al, (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
✕d	The magnitude of the potential LSE identified (collision risk, barrier effect and displacement) could act in-combination with other plans and projects, resulting in a greater level of impact than for Rampion 2 alone. These pathways will be considered at Stage 2. No in-combination issues are identified through the amalgamation of non-significant effects.

HRA Screening Matrix 23: Dungeness, Romney Marsh and Rye Bay (UK) SPA

Name of European site:	**Dungeness, Romney Marsh and Rye Bay (UK) SPA**																					
EU Code:	**UK9012091**																					
Distance to Project:	**36.1 km to Array**																					
Likely Effects of Project																						
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	
Common tern		√a		×b		×b		×b			×d		×e	×f	×e	×c	×c	×c				
Sandwich tern		√a		×b		×b		×b			×g		×e	×h	×e	×c	×c	×c				
Shoveler																						
Marsh harrier																						
Hen harrier																						
Avocet																						
Golden plover																						
Ruff																						
Mediterranean gull																						
Bittern																						
Bewick's swan																						
Little tern																						
Aquatic warbler																						

Evidence supporting conclusions:

√a	These species have moderate vulnerability to collision risk with turbines (Bradbury et al. 2014). Based on the proximity of, the Array and the the mean maximum foraging range of these species (Woodward et al. 2019potential connectivity during the breeding season has been established and LSE cannot therefore be discounted for effects both alone and in-combination.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for these highly-mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms is of no LSE being concluded. Consequently, LSE can be discounted at this stage
×c	Unlikely for impacts to occour at an incombination level due to non pathway for effect at a project alone level.
×d	These species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury et al, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage.
×e	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al*., 2019). Therefore, LSE can be discounted at this stage.
×f	Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury et al, (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
×g	This species has moderate vulnerability to collision risk with turbines (Bradbury et al, 2014). However, Rampion 2 is located beyond the mean-maximum foraging range of this species (Woodward et al, 2019) from this SPA. Therefore, LSE can be discounted at this stage.
×h	Experience of other offshore wind farms is of no LSE being concluded. Therefore, LSE can be discounted at this stage

HRA Screening Matrix 24: Littoral seino-marin (FR) SPA

Name of European site:	**Littoral seino-marin (FR) SPA**																		
EU Code:	**FR2310045**																		
Distance to Project:	**72.2 km to Array**																		
Likely Effects of Project																			
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		×a		×b		×c		×b			×d		×e	×f	×c	×h	×h	×h
Lesser black-backed gull		√a		×b		×c		×b			×d		×e	×f	×c	×d	×d	×d
Great black-backed gull		×g		×b		×c		×b			×d		×e	×f	×c	×h	×h	×h
Kittiwake		√a		×b		×c		×b			×d		×e	×f	×c	×d	×d	×d
Common sandpiper																		
Razorbill																		
Greenland white-fronted goose																		
Greylag goose																		
Short-eared owl																		
Purple sandpiper																		
Great skua																		
Hen harrier																		
Little egret																		
Merlin																		
Peregrine falcon																		
Red-throated diver																		
Black-throated diver																		
Great northern diver																		
Gull-billed tern																		
European storm petrel																		
Herring gull																		
Mediterranean gull																		
Little gull																		
Sabine's gull																		
Woodlark																		
Velvet scoter																		
Common scoter																		
Gannet																		
Red-breasted merganser																		
Leach's European storm petrel																		
Honey buzzard																		
Shag																		
Cormorant																		
Spoonbill																		
Slavonian grebe																		
Great crested grebe																		
Black-necked grebe																		
Manx shearwater																		
Balearic shearwater																		
Avocet																		
Eider																		
Arctic skua																		
Pomarine skua																		
Little tern																		
Common tern																		
Arctic tern																		
Sandwich tern																		
Shelduck																		
Guillemot																		

Evidence supporting conclusions:	
×a	This species has low vulnerability to collision risk with turbines (Bradbury et al, 2014). LSE can therefore be discounted at this stage.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for this highly-mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms of no LSE. Consequently, LSE can be discounted at this stage.
×c	The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase.
×d	This species has a significant mean-maximum foraging range with a high degree of habitat flexibility. As a result, any potential additional energetic expenditure as a result of barrier impacts will be trivial. Furthermore, experience of other offshore wind farms is of no LSE being concluded. Therefore, LSE can be discounted at this stage.
×e	This species has very low vulnerability to disturbance associated with vessel and helicopter activity and has a high degree of habitat flexibility (Furness et al, 2013). LSE can therefore be discounted at this stage.
×f	This species has very low vulnerability to displacement from offshore wind farms (Bradbury et al, 2014). Therefore, LSE can be discounted at this stage.
×g	This species has a very high vulnerability to collision risk with turbines (Bradbury et al, 2014). Howver, Rampion 2 is located beyond the mean-maximum foraging range of this species (Woodward et al, 2019) from this SPA. Limited connectivity associted with this site during the breeding season. Therefore, LSE cannot be discounted at this stage.
×h	Unlikely for impacts to occour at an incombination level due to no pathway for effect at a project alone level.
✓a	This species has moderate to very high vulnerability to collision risk with turbines (Bradbury et al, 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward et al, 2019) from this site. LSE can therefore not be discounted at this stage.
×d	The magnitude of the potential LSE identified (collision risk) could act in-combination with other plans and projects, resulting in a greater level of impact than for Rampion 2 alone. These pathways will be considered at Stage 2. No in-combination issues are identified through the amalgamation of non-significant effects.

HRA Screening Matrix 25: Medway Estuary and Marshes (UK) SPA

Name of European site:	**Medway Estuary and Marshes (UK) SPA**
EU Code:	**UK9012031**
Distance to Project:	**91.5 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		×a		×b		×b		×b			×d		×e	×f	×e	×c	√a	×c
Great crested grebe																		
Cormorant																		
Bewick's Swan																		
Shelduck																		
Wigeon																		
Teal																		
Mallard																		
Pintail																		
Shoveler																		
Pochard																		
Hen harrier																		
Merlin																		
Oystercatcher																		
Avocet																		
Ringed plover																		
Grey plover																		
Knot																		
Curlew																		
Redshank																		
Greenshank																		
Turnstone																		
Red-throated diver																		
Little tern																		
Black-tailed godwit																		
Dunlin																		
Dark-bellied brent goose																		

Evidence supporting conclusions:

×a	These species have moderate vulnerability to collision risk with turbines (Bradbury *et al*. 2014). However, array is located beyond the mean maximum foraging range of these species (Woodward *et al*. 2019) from this site. Potential connectivity during the breeding season although species only recorded in low numbers at the project site. LSE can therefore be discounted.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for these highly-mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms is of no LSE being concluded. Consequently, LSE can be discounted at this stage
×c	Unlikely for impacts to occour at an incombination level due to non pathway for effect at a project alone level.
×d	These species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury et al, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage.
×e	This species has very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al*. 2019). Therefore, LSE can be discounted at this stage.
×f	Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury et al, (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
√a	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.

x`

HRA Screening Matrix 26: Medway Estuary and Marshes (UK) Ramsar

Name of European site:	**Medway Estuary and Marshes (UK) Ramsar**																			
EU Code:	**UK11040**																			
Distance to Project:	**91.5 km to Array**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		×a		×b		×b		×b			×d		×e	×f	×e	×c	✓a	×c
Great crested grebe																		
Cormorant																		
Bewick's Swan																		
Shelduck																		
Wigeon																		
Teal																		
Mallard																		
Pintail																		
Shoveler																		
Pochard																		
Hen harrier																		
Merlin																		
Oystercatcher																		
Avocet																		
Ringed plover																		
Grey plover																		
Knot																		
Curlew																		
Redshank																		
Greenshank																		
Turnstone																		
Red-throated diver																		
Little tern																		
Black-tailed godwit																		
Dunlin																		
Dark-bellied brent goose																		

Evidence supporting conclusions:

×a	This species has moderate vulnerability to collision risk with turbines (Bradbury *et al*. 2014). However, array is located beyond the mean maximum foraging range of these species (Woodward *et al*. 2019) from this site. Potential connectivity during the breeding season although species only recorded in low numbers at the project site. LSE can therefore be discounted.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for these highly-mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms is of no LSE being concluded. Consequently, LSE can be discounted at this stage
×c	Unlikely for impacts to occour at an incombination level due to non pathway for effect at a project alone level.
×d	This species has low vulnerability to displacement (the result of avoidance behaviour) (Bradbury et al, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage.
×e	This species has low vulnerability to displacement (the result of avoidance behaviour) (Bradbury et al, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage.
×f	This species has low vulnerability to displacement (the result of avoidance behaviour) (Bradbury et al, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage.
✓a	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.

HRA Screening Matrix 27: Outer Thames Estuary (UK) SPA

Name of European site:	**Outer Thames Estuary (UK) SPA**																			
EU Code:	**UK9020309**																			
Distance to Project:	**103.5 km to Array**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Red-throated diver																				
Common tern		×a		×b		×b		×b			×c		×d	×e	×d	×f	×f	×f		
Little tern																				

Evidence supporting conclusions:

×a	These species have moderate vulnerability to collision risk with turbines (Bradbury *et al*. 2014). However, array is located beyond the mean maximum foraging range of these species (Woodward *et al*. 2019) from this site. Potential connectivity during the breeding season although species only recorded in low numbers at the project site. LSE can therefore be discounted.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for these highly-mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms is of no LSE being concluded. Consequently, LSE can be discounted at this stage
×c	Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury et al, (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
×d	This species has very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al*. 2019). Therefore, LSE can be discounted at this stage.
×e	This species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury et al, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage.
×f	Unlikely for impacts to occur at an in-combination level due to lack of pathway for effect from Rampion 2 acting alone

HRA Screening Matrix 28: Foulness (Mid-Essex Coast Phase 5) (UK) SPA

Name of European site:	**Foulness (Mid-Essex Coast Phase 5) (UK) SPA**
EU Code:	**UK9009246**
Distance to Project:	**109.9 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		×a		×b		×b		×b			×c		×d	×e	×d	×f	✓a	×f
Sandwich tern		×a		×b		×b		×b			×g		×d	×h	×d	×f	✓a	×f
Avocet																		
Ringed plover																		
Grey plover																		
Red knot																		
Bar-tailed godwit																		
Redshank																		
Hen harrier																		
Oystercatcher																		
Little tern																		
Dark-bellied brent goose																		

Evidence supporting conclusions:

×a	These species have moderate vulnerability to collision risk with turbines (Bradbury *et al*. 2014). However, array is located beyond the mean maximum foraging range of these species (Woodward *et al*. 2019) from this site. Potential connectivity during the breeding season although species only recorded in low numbers at the project site. LSE can therefore be discounted.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for these highly-mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms is of no LSE being concluded. Consequently, LSE can be discounted at this stage
×c	Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury et al, (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
×d	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al*. 2019). Therefore, LSE can be discounted at this staqe.
×e	This species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury et al, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage.
×f	Unlikely for impacts to occur at an incombination level due to lack of pathway for effect from Rampion 2 acting alone
×g	This species has moderate vulnerability to collision risk with turbines (Bradbury et al, 2014). However, Rampion 2 is located beyond the mean-maximum foraging range of this species (Woodward et al, 2019) from this SPA. Therefore, LSE can be discounted at this stage.
×h	Experience of other offshore wind farms is of no LSE being concluded. Therefore, LSE can be discounted at this stage
✓a	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.

HRA Screening Matrix 29: Foulness (Mid-Essex Coast Phase 5) (UK) Ramsar

Name of European site:	**Foulness (Mid-Essex Coast Phase 5) (UK) Ramsar**
EU Code:	**UK11026**
Distance to Project:	**109.9 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		×a		×b		×b		×b			×c		×d	×e	×d	×f	✓a	×f
Sandwich tern		×a		×b		×b		×b			×g		×d	×h	×d	×f	✓a	×f
Avocet																		
Ringed plover																		
Grey plover																		
Red knot																		
Bar-tailed godwit																		
Redshank																		
Hen harrier																		
Oystercatcher																		
Little tern																		
Dark-bellied brent goose																		

Evidence supporting conclusions:

×a	These species have moderate vulnerability to collision risk with turbines (Bradbury *et al*. 2014). However, array is located beyond the mean maximum foraging range of these species (Woodward *et al*. 2019) from this site. Potential connectivity during the breeding season although species only recorded in low numbers at the project site. LSE can therefore be discounted.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for these highly-mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms is of no LSE being concluded. Consequently, LSE can be discounted at this stage
×c	Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury et al, (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
×d	These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al*., 2019). Therefore, LSE can be discounted at this stage.
×e	This species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury et al, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage.
×f	Unlikely for impacts to occur at an in-combination level due to lack of pathway for effect from Rampion 2 acting alone
×g	This species has moderate vulnerability to collision risk with turbines (Bradbury et al, 2014). However, Rampion 2 is located beyond the mean-maximum foraging range of this species (Woodward et al, 2019) from this SPA. Therefore, LSE can be discounted at this stage.
×h	Experience of other offshore wind farms is of no LSE being concluded. Therefore, LSE can be discounted at this stage
✓a	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.

HRA Screening Matrix 30: Falaise du Bessin Occidental (FR) SPA

Name of European site:	**Falaise du Bessin Occidental (FR) SPA**																				
EU Code:	**FR2510099**																				
Distance to Project:	**132.6 km to Array**																				
Likely Effects of Project																					
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		×a		×b		×c		×b			×d		×e	×f	×c	×g	×g	×g
Kittiwake		✓a		×b		×c		×b			×d		×e	×f	×c	×h	×h	×h
Razorbill																		
Short-eared owl																		
Peregrine falcon																		
Red-throated diver																		
Herring gull																		
Lesser black-backed gull																		
Red-breasted merganser																		
Shag																		
Cormorant																		
Guillemot																		
Dartford Warbler																		

Evidence supporting conclusions:

×a	This species has low vulnerability to collision risk with turbines (Bradbury et al, 2014). LSE can therefore be discounted at this stage
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for this highly-mobile receptor. Temporary and lc impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms of no LSE. Consequently, LSE can be discounted at this stage.
×c	The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase
×d	This species has a significant mean-maximum foraging range with a high degree of habitat flexibility. As a result, any potential additional energetic expenditure as a result of barrier impacts will be trivial. Furthermore, experience of other offshore wind farms is of no LSE being concluded. Therefore, LSE can be discounted at this stag
×e	This species has very low vulnerability to disturbance associated with vessel and helicopter activity and has a high degree of habitat flexibility (Furness et al, 2013). LSE can therefore be discounted at this stage.
×f	This species has very low vulnerability to displacement from offshore wind farms (Bradbury et al, 2014). Therefore, LSE can be discounted at this stage.
×g	This species has a very high vulnerability to collision risk with turbines (Bradbury et al, 2014). However, Rampion 2 is located beyond the mean-maximum foraging range of this species (Woodward et al, 2019) from this SPA. Limited connectivity associted with this site during the breeding season. Therefore, LSE cannot be discounted at this stag
✓a	This species has moderate to very high vulnerability to collision risk with turbines (Bradbury et al, 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward et al, 2019) from this site. LSE can therefore not be discounted at this stag
×h	The magnitude of the potential LSE identified (from collision risk) could act in-combination with other plans and projects, resulting in a greater level of impact than for Rampion 2 alone. These pathways will be considered at Stage 2. No in-combination issues are identified through the amalgamation of non-significant effects

HRA Screening Matrix 31: Alde-Ore Estuary (UK) SPA

Name of European site:	**Alde-Ore Estuary (UK) SPA**
EU Code:	**UK9009112**
Distance to Project:	**181.5 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Lesser black-backed gull		×a		×b		×b		×b			×c		×d	×e	×d	×f	✓a	×f
Sandwich tern		×f		×f		×f		×f			×f		×f	×f	×f	×f	×f	×f
Ruff																		
Redshank																		
Avocet																		
Marsh Harrier																		
Little tern																		

Evidence supporting conclusions:

×a	Species has very high vulnerability to collision risk with turbines (Bradbury et al, 2014). However, Rampion 2 is located a significant distance beyond the mean-maximum foraging range of this species (Woodward et al, 2019) from this site. Connectivity during the non-breeding season is limited as species is largely migratory, travelling south following the breeding season (Wright et al, 2012). Furthermore, an assessment of collision apportioned to this site outside of the breeding season by Percival 2013 for Rampion OWF found the impact to be negligable. Therefore, LSE can be discounted at this stage.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for these highly-mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms is of no LSE being concluded. Consequently, LSE can be discounted at this stage
×c	Evidence suggests this species is attracted to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury et al, (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
×d	These species has very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al*. 2019). Therefore, LSE can be discounted at this stage.
×e	This species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury et al, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage.
✓a	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.
×f	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 32: Alde-Ore Estuary (UK) Ramsar

Name of European site:	**Alde-Ore Estuary (UK) Ramsar**																			
EU Code:	**UK11002**																			
Distance to Project:	**181.5 km to Array**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Lesser black-backed gull		×a		×b		×b		×b			×c		×d	×e	×d	×f	✓a	×f
Sandwich tern		×f		×f		×f		×f			×f		×f	×f	×f	×f	×f	×f
Ruff																		
Redshank																		
Avocet																		
Marsh Harrier																		
Little tern																		

Evidence supporting conclusions:

×a	Species has very high vulnerability to collision risk with turbines (Bradbury et al, 2014). However, Rampion 2 is located a significant distance beyond the mean-maximum foraging range of this species (Woodward et al, 2019) from this site. Connectivity during the non-breeding season is limited as species is largely migratory, travelling south following the breeding season (Wright et al, 2012). Furthermore, an assessment of collision apportioned to this site outside of the breeding season by Percival 2013 for Rampion OWF found the impact to be negligable. Therefore, LSE can be discounted at this stage.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for these highly-mobile receptors. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms is of no LSE being concluded. Consequently, LSE can be discounted at this stage
×c	Evidence suggests this species is attracted to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury et al, (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage
×d	This species has very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach*et al* . 2019). Therefore, LSE can be discounted at this stage.
×e	This species has low vulnerability to displacement (the result of avoidance behaviour) (Bradbury et al, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage
✓a	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. LSE cannot be discounted on current information for Rampion 2 operating with other OWFs
×f	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 33: Chausey (FR) SPA

Name of European site:	**Chausey (FR) SPA**																			
EU Code:	**FR2510037**																			
Distance to Project:	**188.4 km to Array**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Gannet		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Turnstone																				
Purple sandpiper																				
Sanderling																				
Red-throated diver																				
Black-throated diver																				
Oystercatcher																				
European storm petrel																				
Herring gull																				
Common gull																				
Lesser black-backed gull																				
Great black-backed gull																				
Black-headed gull																				
Common scoter																				
Red-breasted merganser																				
Shag																				
Cormorant																				
Grey plover																				
Slavonian grebe																				
Black-necked grebe																				
Manx shearwater																				
Balearic shearwater																				

Eider																	
Common tern																	
Sandwich tern																	
Shelduck																	
Razorbill																	
Guillemot																	

Evidence supporting conclusions:

×a	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 34: Cap d'Erquy-Cap Fréhel (FR) SPA

Name of European site:	**Cap d'Erquy-Cap Fréhel (FR) SPA**																			
EU Code:	**FR5310095**																			
Distance to Project:	**228.6 km to Array**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Fulmar		×a		×b		×c		×b			×d		×e	×f	×c	×g	×g	×g		
Dark-bellied brent goose																				
Dunlin																				
Nightjar																				
Ringed plover																				
Peregrine falcon																				
Razorbill																				
Oystercatcher																				
Herring gull																				
Lesser black-backed gull																				
Great black-backed gull																				
Gannet																				
Shag																				
Cormorant																				
Balearic shearwater																				
Kittiwake																				
Dartford warbler																				
Shelduck																				
Guillemot																				

Evidence supporting conclusions:

×a	This species has low vulnerability to collision risk with turbines (Bradbury et al, 2014). LSE can therefore be discounted at this stage.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for this highly-mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms of no LSE. Consequently, LSE can be discounted at this stage.
×c	The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase.
×d	This species has a significant mean-maximum foraging range with a high degree of habitat flexibility. As a result, any potential additional energetic expenditure as a result of barrier impacts will be trivial. Furthermore, experience of other offshore wind farms is of no LSE being concluded. Therefore, LSE can be discounted at this stage.
×e	This species has very low vulnerability to disturbance associated with vessel and helicopter activity and has a high degree of habitat flexibility (Furness et al, 2013). LSE can therefore be discounted at this stage.
×f	This species has very low vulnerability to displacement from offshore wind farms (Bradbury et al, 2014). Therefore, LSE can be discounted at this stage.
×g	This species has a very high vulnerability to collision risk with turbines (Bradbury et al, 2014). However, Rampion 2 is located beyond the mean-maximum foraging range of this species (Woodward et al, 2019) from this SPA. Limited connectivity associted with this site during the breeding season. Therefore, LSE cannot be discounted at this stage.

HRA Screening Matrix 35: The Wash (UK) SPA

Name of European site:	**The Wash (UK) SPA**																			
EU Code:	**UK9008021**																			
Distance to Project:	**230 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	√a	Xa
Pink-footed goose																		
Shelduck																		
Wigeon																		
Gadwall																		
Pintail																		
Common scoter																		
Goldeneye																		
Oystercatcher																		
Grey plover																		
Red knot																		
Sanderling																		
Bar-tailed godwit																		
Curlew																		
Redshank																		
Turnstone																		
Bewick's swan																		
Little tern																		
Black-tailed godwit																		
Dunlin																		
Dark-bellied brent goose																		

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.
√a	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.

HRA Screening Matrix 36: The Wash (UK) Ramsar

Name of European site:	**The Wash (UK) Ramsar**																			
EU Code:	**UK11072**																			
Distance to Project:	**230 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	✓a	×a
Pink-footed goose																		
Common shelduck																		
Wigeon																		
Gadwall																		
Pintail																		
Common scoter																		
Goldeneye																		
Oystercatcher																		
Grey plover																		
Red knot																		
Sanderling																		
Bar-tailed godwit																		
Curlew																		
Redshank																		
Ruddy turnstone																		
Bewick's swan																		
Little tern																		
Black-tailed godwit																		
Dunlin																		
Dark-bellied brent goose																		

Evidence supporting conclusions:

×a — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

✓a — The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.

HRA Screening Matrix 37: Breydon Water (UK) SPA

Name of European site:	**Breydon Water (UK) SPA**
EU Code:	**UK9009181**
Distance to Project:	**239.3 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Avocet																		
Golden plover																		
Lapwing																		
Ruff																		
Bewick's swan																		

Evidence supporting conclusions:

×a	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 38: Breydon Water (UK) Ramsar

Name of European site:	**Breydon Water (UK) Ramsar**
EU Code:	**UK11008**
Distance to Project:	**239.3 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Avocet																		
Golden plover																		
Lapwing																		
Ruff																		
Bewick's swan																		

Evidence supporting conclusions:

×a The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 39: Tregor Goëlo (FR) SPA

Name of European site:	**Tregor Goëlo (FR) SPA**
EU Code:	**FR5310070**
Distance to Project:	**244.4 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		X[a]		X[b]		X[c]		X[b]			X[d]		X[e]	X[f]	X[c]	X[g]	X[g]	X[g]
Pintail																		
Teal																		
Wigeon																		
Grey heron																		
Turnstone																		
Dark-bellied brent goose																		
Sanderling																		
Dunlin																		
Knot																		
Kentish plover																		
Ringed-plover																		
Little egret																		
Merlin																		
Peregrine falcon																		
Kingfisher																		
Black-throated diver																		
Great northern diver																		
Oystercatcher																		
Herring gull																		
Lesser black-backed gull																		
Great black-backed gull																		

Mediterranean gull																	
Bar-tailed godwit																	
Red-breasted- merganser																	
Curlew																	
Osprey																	
Shag																	
Cormorant																	
Golden plover																	
Grey plover																	
Slavonian grebe																	
Great-crested grebe																	
Black-necked grebe																	
Balearic shearwater																	
Avocet																	
Little tern																	
Common tern																	
Sandwich tern																	
Shelduck																	
Little grebe																	
Redshank																	
Lapwing																	
Spotted redshank																	

Evidence supporting conclusions:

×a	This species has low vulnerability to collision risk with turbines (Bradbury et al, 2014). LSE can therefore be discounted at this stage.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for this highly-mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms of no LSE. Consequently, LSE can be discounted at this stage.
×c	The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase.
×d	This species has a significant mean-maximum foraging range with a high degree of habitat flexibility. As a result, any potential additional energetic expenditure as a result of barrier impacts will be trivial. Furthermore, experience of other offshore wind farms is of no LSE being concluded. Therefore, LSE can be discounted at this stage.
×e	This species has very low vulnerability to disturbance associated with vessel and helicopter activity and has a high degree of habitat flexibility (Furness et al, 2013). LSE can therefore be discounted at this stage.
×f	This species has very low vulnerability to displacement from offshore wind farms (Bradbury et al, 2014). Therefore, LSE can be discounted at this stage.
×g	This species has a very high vulnerability to collision risk with turbines (Bradbury et al, 2014). However, Rampion 2 is located beyond the mean-maximum foraging range of this species (Woodward et al, 2019) from this SPA. Limited connectivity associted with this site during the breeding season. Therefore, LSE cannot be discounted at this stage.

HRA Screening Matrix 40: Greater Wash (UK) SPA

Name of European site:	**Greater Wash (UK) SPA**																				
EU Code:	**UK9020329**																				
Distance to Project:	**244.7 km from Offshore cable corridor**																				
Likely Effects of Project																					
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a			
Sandwich tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a			
Little gull																					
Red-throated diver																					
Common scoter																					
Little tern																					

Evidence supporting conclusions:

×a — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

√a — The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.

HRA Screening Matrix 41: North Norfolk Coast (UK) SPA

Name of European site:	**North Norfolk Coast (UK) SPA**
EU Code:	**UK9009031**
Distance to Project:	**251.9 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	✓a	×a
Sandwich tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	✓a	×a
Wigeon																		
Marsh harrier																		
Avocet																		
Knot																		
Bittern																		
Pink-footed goose																		
Little tern																		
Dark-bellied brent goose																		
Montagu's harrier																		

Evidence supporting conclusions:

×a — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

✓a — The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.

HRA Screening Matrix 42: North Norfolk Coast (UK) Ramsar

Name of European site:	**North Norfolk Coast (UK) Ramsar**
EU Code:	**UK11048**
Distance to Project:	**251.9 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	✓a	×a
Sandwich tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	✓a	×a
Wigeon																		
Marsh harrier																		
Avocet																		
Knot																		
Bittern																		
Pink-footed goose																		
Little tern																		
Dark-bellied brent goose																		
Montagu's harrier																		

Evidence supporting conclusions:

×a	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this Ramsar. It is determined that significant effects would not therefore manifest on this distant Ramsar after the likelihood and severity of effects on the Ramsar have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.
✓a	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.

HRA Screening Matrix 43: Côte de Granit Rose-Sept Iles (FR) SPA

Name of European site:	**Côte de Granit Rose-Sept Iles (FR) SPA**
EU Code:	**FR5310011**
Distance to Project:	**257.8 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Manx shearwater		×a		×b		×c		×b			×d		×e	×f	×c	×g	×g	×g
Fulmar		×a		×b		×c		×b			×d		×e	×f	×c	×g	×g	×g
European storm petrel		×a		×b		×c		×b			×d		×e	×f	×c	×g	×g	×g
Gannet		✓a		×b		×c		×b			×d		×e	✓b	×c	×h	×h	×h
Razorbill																		
Brent goose																		
Purple sandpiper																		
Ringed plover																		
Puffin																		
Oystercatcher																		
Herring gull																		
Common gull																		
Lesser black-backed gull																		
Great black-backed gull																		
Mediterranean gull																		
Red-breasted merganser																		
Shag																		
Slavonian grebe																		
Great-crested grebe																		
Balearic shearwater																		
Kittiwake																		
Little tern																		
Roseate tern																		
Common tern																		
Sandwich tern																		
Shelduck																		
Guillemot																		

Evidence supporting conclusions:

×a	This species has low vulnerability to collision risk with turbines (Bradbury et al, 2014). LSE can therefore be discounted at this stage.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for this highly-mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms of no LSE. Consequently, LSE can be discounted at this stage.
×c	The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase.
×d	This species has a significant mean-maximum foraging range with a high degree of habitat flexibility. As a result, any potential additional energetic expenditure as a result of barrier impacts will be trivial. Furthermore, experience of other offshore wind farms is of no LSE being concluded. Therefore, LSE can be discounted at this stage.
×e	This species has very low vulnerability to disturbance associated with vessel and helicopter activity and has a high degree of habitat flexibility (Furness et al, 2013). LSE can therefore be discounted at this stage.
×f	This species has very low vulnerability to displacement from offshore wind farms (Bradbury et al, 2014). Therefore, LSE can be discounted at this stage.
×q	This species has a very high vulnerability to collision risk with turbines (Bradbury et al, 2014). However, Rampion 2 is located beyond the mean-maximum foraging range of this species (Woodward et al, 2019) from this SPA. Limited connectivity associted with this site during the breeding season. Therefore, LSE cannot be discounted at this stage.
✓a	This species has high vulnerability to collision risk with turbines (Bradbury et al, 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward et al, 2019) from this site. LSE can therefore not be discounted at this stage.
✓b	This species has moderate to high vulnerability to displacement from offshore wind farms (Bradbury et al, 2014). Therefore, LSE cannot be discounted at this stage.
×h	The magnitude of the potential LSE identified (collision risk and disturbance displacement) could act in-combination with other plans and projects, resulting in a greater level of impact than for Rampion 2 alone. These pathways will be considered at Stage 2. No in-combination issues are identified through the amalgamation of non-significant effects.

HRA Screening Matrix 44: Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a moroedd Benfro (UK) SPA

Name of European site:	**Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a moroedd Benfro (UK) SPA**																			
EU Code:	**UK9014051**																			
Distance to Project:	**310.8 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Manx shearwater		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
European storm petrel		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Lesser black-backed gull																				
Puffin																				
Short-eared owl																				
Chough																				

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 45: Glannau Aberdaron and Ynys Enlli / Aberdaron Coast and Bardsey Island (UK) SPA

Name of European site:	**Glannau Aberdaron and Ynys Enlli / Aberdaron Coast and Bardsey Island (UK) SPA**																			
EU Code:	**UK9013121**																			
Distance to Project:	**352.5 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Manx shearwater		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Chough																				

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 46: Flamborough and Filey Coast (UK) SPA

Name of European site:	**Flamborough and Filey Coast (UK) SPA**
EU Code:	**UK9006101**
Distance to Project:	**366.5 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Kittiwake		×a		×a		×a		×a			×a		×a	×a	×a	×a	√b	×a
Guillemot		×a		×a		×a		×a			×a		×a	×a	×a	√b	√b	×a
Gannet		×a		×a		×a		×a			×a		×a	×a	×a	×a	√b	×a
Razorbill		×a		×a		×a		×a			×a		×a	×a	×a	√b	√b	×a
Herring gull		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Shag																		
Cormorant																		
Puffin																		

Evidence supporting conclusions:

×a	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context
√b	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.

HRA Screening Matrix 47: Ouessant-Molène (FR) SPA

Name of European site:	**Ouessant-Molène (FR) SPA**																			
EU Code:	**FR5310072**																			
Distance to Project:	**376.1 km to Array**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Manx shearwater		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Razorbill																				
Turnstone																				
Purple sandpiper																				
Cory's shearwater																				
Great skua																				
Ringed plover																				
Hen harrier																				
Little egret																				
Peregrine falcon																				
Puffin																				
Red-throated diver																				
Black-throated diver																				
Great Northern diver																				
Oystercatcher																				
European storm petrel																				
Herring gull																				
Lesser black-backed gull																				
Great black-backed gull																				
Gannet																				
Whimbrel																				
Leach's European storm petrel																				
Shag																				
Cormorant																				
Grey plover																				
Balearic shearwater																				
Sooty shearwater																				
Chough																				
Kittiwake																				
Pomarine skua																				
Common tern																				
Roseate tern																				
Little tern																				
Sandwich tern																				
Shelduck																				
Ringed plover																				
Guillemot																				

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severil effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 48: Camaret (FR) SPA

Name of European site:	**Camaret (FR) SPA**
EU Code:	**FR5312004**
Distance to Project:	**385.3 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Peregrine falcon																		
Raven																		
European storm petrel																		
Herring gull																		
Lesser black-backed gull																		
Great black-backed gull																		
Shag																		
Cormorant																		
Chough																		
Kittiwake																		
Guillemot																		

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 49: Iles Houat-Hoëdic (FR) SPA

Name of European site:	**Iles Houat-Hoëdic (FR) SPA**
EU Code:	**FR5312011**
Distance to Project:	**390.2 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Manx shearwater		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Great-northern diver																		
Black-throated diver																		
Fulmar																		
Herring gull																		
Lesser black-backed gull																		
Great black-backed gull																		
Shag																		
Balearic shearwater																		

Evidence supporting conclusions:

×a The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 50: Cap Sizun (FR) SPA

Name of European site:	**Cap Sizun (FR) SPA**																			
EU Code:	**FR5310055**																			
Distance to Project:	**397.9 km to Array**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Manx shearwater		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
European storm petrel																		
Herring gull																		
Lesser black-backed gull																		
Great black-backed gull																		
Shag																		
Kittiwake																		
Shelduck																		
Guillemot																		
Razorbill																		
Chough																		

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severi effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 51: Isles of Scilly (UK) SPA

Name of European site:	**Isles of Scilly (UK) SPA**
EU Code:	**UK9020288**
Distance to Project:	**403.3 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
European storm petrel		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Manx shearwater		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Great black-backed gull																		
Herring gull																		
Kittiwake																		
Razorbill																		
Lesser black-backed gull																		
Guillemot																		
Shag																		
Puffin																		
Common tern																		
Cormorant																		

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 52: Isles of Scilly (UK) Ramsar

Name of European site:	**Isles of Scilly (UK) Ramsar**
EU Code:	**UK11033**
Distance to Project:	**403.3 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
European storm petrel		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Manx sharwater		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Great black-backed gull																		
Herring gull																		
Kittiwake																		
Razorbill																		
Lesser black-backed gull																		
Guillemot																		
Shag																		
Puffin																		
Common tern																		
Cormorant																		

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this Ramsar. It is determined that significant effects would not therefore manifest on this distant Ramsar after the likelihood and severity of effects on the Ramsar have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 53: Northumbria Coast (UK) SPA

Name of European site:	**Northumbria Coast (UK) SPA**
EU Code:	**UK9006131**
Distance to Project:	**439.8 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Arctic tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	✓a	×a
Turnstone																		
Purple sandpiper																		
Little tern																		

Evidence supporting conclusions:

×a	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.
✓a	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.

HRA Screening Matrix 54: Northumbria Coast (UK) Ramsar

Name of European site:	**Northumbria Coast (UK) Ramsar**
EU Code:	**UK11049**
Distance to Project:	**439.8 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Arctic tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a
Turnstone																		
Purple sandpiper																		
Little tern																		

Evidence supporting conclusions:

×a	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this Ramsar. It is determined that significant effects would not therefore manifest on this distant Ramsar after the likelihood and severity of effects on the Ramsar have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.
√a	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.

HRA Screening Matrix 55: Northumberland Marine (UK) SPA

Name of European site:	**Northumberland Marine (UK) SPA**																					
EU Code:	**UK9020325**																					
Distance to Project:	**482.3 km from Offshore cable corridor**																					
Likely Effects of Project																						
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**					
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**				
Sandwich tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a				
Common tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a				
Arctic tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a				
Guillemot		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a				
Kittiwake		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a				
Roseate tern																						
Little tern																						
Puffin																						

Evidence supporting conclusions:

×a — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

√a — The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.

HRA Screening Matrix 56: Coquet Island (UK) SPA

Name of European site:	**Coquet Island (UK) SPA**
EU Code:	**UK9006031**
Distance to Project:	**508.6 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Sandwich tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a
Arctic tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a
Common tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a
Roseate tern																		

Evidence supporting conclusions:

×a	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.
√a	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.

HRA Screening Matrix 57: Farne Islands (UK) SPA

Name of European site:	**Farne Islands (UK) SPA**																					
EU Code:	**UK9006021**																					
Distance to Project:	**540.8 km from Offshore cable corridor**																					
Likely Effects of Project																						
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Sandwich tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a
Kittiwake		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a
Guillemot		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a
Common tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a
Arctic tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	√a	×a
Roseate tern																		

Evidence supporting conclusions:

×a	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.
√a	The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other OWFs.

HRA Screening Matrix 58: St Abb's Head to Fast Castle (UK) SPA

Name of European site:	**St Abb's Head to Fast Castle (UK) SPA**
EU Code:	**UK9004271**
Distance to Project:	**576.4 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Razorbill		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Herring gull		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Shag																		

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 59: Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA

Name of European site:	**Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA**
EU Code:	**UK9020316**
Distance to Project:	**600.6 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Gannet		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Arctic tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Lesser black-backed gull		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Herring gull		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Sandwich tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Razorbill		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Common tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Cormorant																		
Shag																		
Roseate tern																		
Puffin																		

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 60: Imperial Dock Lock, Leith (UK) SPA

Name of European site:	**Imperial Dock Lock, Leith (UK) SPA**																			
EU Code:	**UK9004451**																			
Distance to Project:	**602.2 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 61: Deenish Island and Scariff Island (IE) SPA

Name of European site:	**Deenish Island and Scariff Island (IE) SPA**																			
EU Code:	**IE0004175**																			
Distance to Project:	**677.8 km to Array**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Manx shearwater		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Fulmar																		
European storm petrel																		
Lesser black-backed gull																		
Arctic tern																		

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 62: Fowlsheugh (UK) SPA

Name of European site:	**Fowlsheugh (UK) SPA**
EU Code:	**UK9002271**
Distance to Project:	**686.1 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Herring gull		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Kittiwake		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Guillemot		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Razorbill		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a

Evidence supporting conclusions:

×a The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 63: Puffin Island (IE) SPA

Name of European site:	**Puffin Island (IE) SPA**
EU Code:	**UK11033**
Distance to Project:	**692 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Manx shearwater		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Fulmar																		
European storm petrel																		
Lesser black-backed gull																		
Razorbill																		
Puffin																		

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 64: Skelligs (IE) SPA

Name of European site:	**Skelligs (IE) SPA**
EU Code:	**IE0004007**
Distance to Project:	**698.5 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Manx shearwater		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Fulmar																		
European storm petrel																		
Gannet																		
Kittiwake																		
Guillemot																		
Puffin																		

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 65: Blasket Island (IE) SPA

Name of European site:	**Blasket Island (IE) SPA**
EU Code:	**IE0004008**
Distance to Project:	**703.5 km to Array**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Manx shearwater		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Fulmar																		
European storm petrel																		
Shag																		
Lesser black-backed gull																		
Herring gull																		
Kittiwake																		
Arctic tern																		
Razorbill																		
Puffin																		
Chough																		

Evidence supporting conclusions:

×a	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 66: Cruagh Island (IE) SPA

Name of European site:	**Cruagh Island (IE) SPA**																			
EU Code:	**IE0004170**																			
Distance to Project:	**723.7 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Manx shearwater		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Barnacle goose																		

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 67: Ythan Estuary, Sands of Forvie and Meikle Loch (UK) SPA

Name of European site:	**Ythan Estuary, Sands of Forvie and Meikle Loch (UK) SPA**
EU Code:	**UK9002221**
Distance to Project:	**729.9 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Sandwich tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Pink-footed goose																		
Little tern																		

Evidence supporting conclusions:

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 68: Ythan Estuary and Meikle Loch (UK) Ramsar

Name of European site:	**Ythan Estuary and Meikle Loch (UK) Ramsar**																			
EU Code:	**UK13061**																			
Distance to Project:	**729.9 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Common tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Sandwich tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Pink-footed goose																				
Little tern																				

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this Ramsar. It is determined that significant effects would not therefore manifest on this distant Ramsar after the likelihood and severity of effects on the Ramsar have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 69: Buchan Ness to Collieston Coast (UK) SPA

Name of European site:	**Buchan Ness to Collieston Coast (UK) SPA**
EU Code:	**UK9002491**
Distance to Project:	**731.3 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Herring gull		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Shag																		

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 70: Loch of Strathbeg (UK) SPA

Name of European site:	**Loch of Strathbeg (UK) SPA**
EU Code:	**UK9002211**
Distance to Project:	**762.5 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Sandwich tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Pink-footed goose																		
Greylag goose																		
Barnacle goose																		
Teal																		
Goldeneye																		
Whooper swan																		

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 71: Loch of Strathbeg (UK) Ramsar

Name of European site:	**Loch of Strathbeg (UK) Ramsar**																			
EU Code:	**UK13041**																			
Distance to Project:	**762.5 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Sandwich tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Pink-footed goose																				
Greylag goose																				
Barnacle goose																				
Teal																				
Goldeneye																				
Whooper swan																				

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this Ramsar. It is determined that significant effects would not therefore manifest on this distant Ramsar after the likelihood and severity of effects on the Ramsar have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 72: Troup, Pennan and Lion's Head (UK) SPA

Name of European site:	**Troup, Pennan and Lion's Head (UK) SPA**
EU Code:	**UK9002471**
Distance to Project:	**772.1 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Herring gull		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Kittiwake		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Guillemot		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Razorbill		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a

Evidence supporting conclusions:

×a The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 73: Rum (UK) SPA

Name of European site:	**Rum (UK) SPA**
EU Code:	**UK9001341**
Distance to Project:	**772.8 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Red-throated diver		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Manx shearwater		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Golden eagle																		

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 74: Inner Moray Firth (UK) SPA

Name of European site:	**Inner Moray Firth (UK) SPA**
EU Code:	**UK9001624**
Distance to Project:	**780.3 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Greylag goose																		
Wigeon																		
Teal																		
Greater scaup																		
Goldeneye																		
Red-breasted merganser																		
Goosander																		
Osprey																		
Oystercatcher																		
Curlew																		
Redshank																		
Cormorant																		

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 75: Inner Moray Firth (UK) Ramsar

Name of European site:	**Inner Moray Firth (UK) Ramsar**
EU Code:	**UK13025**
Distance to Project:	**780.3 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Greylag goose																		
Wigeon																		
Teal																		
Greater scaup																		
Goldeneye																		
Red-breasted merganser																		
Goosander																		
Osprey																		
Oystercatcher																		
Curlew																		
Redshank																		
Cormorant																		

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this Ramsar. It is determined that significant effects would not therefore manifest on this distant Ramsar after the likelihood and severity of effects on the Ramsar have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 76: Cromarty Firth (UK) SPA

Name of European site:	**Cromarty Firth (UK) SPA**
EU Code:	**UK9001623**
Distance to Project:	**794.6 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Greylag goose																		
Wigeon																		
Pintail																		
Greater scaup																		
Red-breasted merganser																		
Osprey																		
Osprey																		
Oystercatcher																		
Bar-tailed godwit																		
Curlew																		
Redshank																		
Whooper swan																		
Red knot																		
Dunlin																		

Evidence supporting conclusions:

×a	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 77: Cromarty Firth (UK) Ramsar

Name of European site:	**Cromarty Firth (UK) Ramsar**
EU Code:	**UK13009**
Distance to Project:	**794.6 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Greylag goose																		
Wigeon																		
Pintail																		
Greater scaup																		
Red-breasted merganser																		
Osprey																		
Osprey																		
Oystercatcher																		
Bar-tailed godwit																		
Curlew																		
Redshank																		
Whooper swan																		
Red knot																		
Dunlin																		

Evidence supporting conclusions:

×a	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this Ramsar. It is determined that significant effects would not therefore manifest on this distant Ramsar after the likelihood and severity of effects on the Ramsar have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 78: East Caithness Cliffs (UK) SPA

Name of European site:	**East Caithness Cliffs (UK) SPA**
EU Code:	**UK9001182**
Distance to Project:	**836.9 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Razorbill		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Herring gull		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Great black-backed gull		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Peregrine falcon																		
Shag																		
Coromorant																		

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 79: North Caithness Cliffs (UK) SPA

Name of European site:	**North Caithness Cliffs (UK) SPA**
EU Code:	**UK9001181**
Distance to Project:	**879.7 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Razorbill		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Peregrine falcon																		
Puffin																		

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 80: Pentland Firth Islands (UK) SPA

Name of European site:	**Pentland Firth Islands (UK) SPA**
EU Code:	**UK9001131**
Distance to Project:	**890.6 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Arctic tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 81: Hoy (UK) SPA

Name of European site:	**Hoy (UK) SPA**
EU Code:	**UK9002141**
Distance to Project:	**902.3 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Red-throated diver		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Great black-backed gull		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Kittiwake		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Guillemot		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Peregrine falcon																		
Arctic skua																		
Great skua																		
Puffin																		

Evidence supporting conclusions:

×a The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 82: Copinsay (UK) SPA

Name of European site:	**Copinsay (UK) SPA**
EU Code:	**UK9002151**
Distance to Project:	**908.3 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Great black-backed gull		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa

Evidence supporting conclusions:

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 83: Auskerry (UK) SPA

Name of European site:	**Auskerry (UK) SPA**																			
EU Code:	**UK9002381**																			
Distance to Project:	**924.3 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
European storm petrel		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Arctic tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 84: St Kilda (UK) SPA

Name of European site:	**St Kilda (UK) SPA**
EU Code:	**UK9001031**
Distance to Project:	**926.8 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Manx shearwater		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
European storm petrel		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Leach's storm petrel		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Gannet		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Razorbill		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Great skua																		
Puffin																		

Evidence supporting conclusions:

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 85: Marwick Head (UK) SPA

Name of European site:	**Marwick Head (UK) SPA**																			
EU Code:	**UK9002121**																			
Distance to Project:	**939.7 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Kittiwake		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		

Evidence supporting conclusions:

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 86: Rousay (UK) SPA

Name of European site:	**Rousay (UK) SPA**
EU Code:	**UK9002371**
Distance to Project:	**942.1 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Guillemot		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Kittiwake		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Arctic tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Arctic skua																		

Evidence supporting conclusions:

×a The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 87: Calf of Eday (UK) SPA

Name of European site:	**Calf of Eday (UK) SPA**
EU Code:	**UK9002431**
Distance to Project:	**946 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Great black-backed gull		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Cormorant																		

Evidence supporting conclusions:

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 88: Sule Skerry and Sule Stack (UK) SPA

Name of European site:	**Sule Skerry and Sule Stack (UK) SPA**
EU Code:	**UK9002181**
Distance to Project:	**946.6 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
European storm petrel		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Leach's storm petrel		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Gannet		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Shag																		
Puffin																		

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 89: West Westray (UK) SPA

Name of European site:	**West Westray (UK) SPA**
EU Code:	**UK9002101**
Distance to Project:	**953.8 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Razorbill		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Arctic tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Arctic skua																		

Evidence supporting conclusions:

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 90: Papa Westray (North Hill and Holm) (UK) SPA

Name of European site:	**Papa Westray (North Hill and Holm) (UK) SPA**																			
EU Code:	**UK9002111**																			
Distance to Project:	**962.3 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Arctic tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Arctic skua																				

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 91: Fair Isle (UK) SPA

Name of European site:	**Fair Isle (UK) SPA**
EU Code:	**UK9002091**
Distance to Project:	**969.3 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Gannet		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Shag																		
Arctic skua																		
Kittiwake		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Arctic tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Razorbill		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Puffin																		
Fair Isle wren																		

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 92: Sumburgh Head (UK) SPA

Name of European site:	**Sumburgh Head (UK) SPA**
EU Code:	**UK9002511**
Distance to Project:	**1006.5 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Arctic tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa

Evidence supporting conclusions:

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 93: Noss (UK) SPA

Name of European site:	**Noss (UK) SPA**
EU Code:	**UK9002081**
Distance to Project:	**1037.2 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Gannet		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Great skua																		
Puffin																		

Evidence supporting conclusions:

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 94: Foula (UK) SPA

Name of European site:	**Foula (UK) SPA**
EU Code:	**UK9002061**
Distance to Project:	**1038.3 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Red-throated diver		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Leach's storm petrel		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Kittiwake		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Arctic tern		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Guillemot		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Razorbill		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Arctic skua																		
Great skua																		
Shag																		
Puffin																		

Evidence supporting conclusions:

×a The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 95: Papa Stour (UK) SPA

Name of European site:	**Papa Stour (UK) SPA**																			
EU Code:	**UK9002051**																			
Distance to Project:	**1062.1 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Ringed plover																		
Arctic tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 96: Ronas Hill - North Roe and Tingon (UK) SPA

Name of European site:	**Ronas Hill - North Roe and Tingon (UK) SPA**																			
EU Code:	**UK9002041**																			
Distance to Project:	**1082.3 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Red-throated diver		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Great skua																		

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 97: Ronas Hill - North Roe and Tingon (UK) Ramsar

Name of European site:	**Ronas Hill - North Roe and Tingon (UK) Ramsar**																			
EU Code:	**UK13054**																			
Distance to Project:	**1082.3 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Red-throated diver		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Great skua																				

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this Ramsar. It is determined that significant effects would not therefore manifest on this distant Ramsar after the likelihood and severity of effects on the Ramsar have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 98: Otterswick and Graveland (UK)S SPA

Name of European site:	**Otterswick and Graveland (UK) SPA**																			
EU Code:	**UK9002941**																			
Distance to Project:	**1083.6 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Red-throated diver		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 99: Fetlar (UK) SPA

Name of European site:	**Fetlar (UK) SPA**																			
EU Code:	**UK9002031**																			
Distance to Project:	**1084.9 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Arctic tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Red-necked phalarope																				
Arctic skua																				
Great skua																				
Whimbrel																				
Dunlin																				

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 100: Ramna Stacks and Gruney (UK) SPA

Name of European site:	**Ramna Stacks and Gruney (UK) SPA**
EU Code:	**UK9002021**
Distance to Project:	**1097.7 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Leach's storm petrel		×a		×a		×a		×a			×a							

Evidence supporting conclusions:

×a	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 101: Hermaness, Saxa Vord and Valla Field (UK) SPA

Name of European site:	**Hermaness, Saxa Vord and Valla Field (UK) SPA**
EU Code:	**UK9002011**
Distance to Project:	**1104.5 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Fulmar		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Red-throated diver		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Gannet		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Shag																		
Great skua																		
Puffin																		

Evidence supporting conclusions:

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 102: Copeland Islands (UK) SPA

Name of European site:	**Copeland Islands (UK) SPA**
EU Code:	**UK9020291**
Distance to Project:	**544.4 km to Export cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Manx shearwater		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Arctic tern																		

Evidence supporting conclusions:

Xa — The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 103: Caithness and Sutherland Peatlands (UK) SPA

Name of European site:	**Caithness and Sutherland Peatlands (UK) SPA**
EU Code:	**UK9001151**
Distance to Project:	**841.3 km to Export cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Red-throated diver		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Black-throated diver																		
Wigeon																		
Common scoter																		
Hen harrier																		
Golden eagle																		
Merlin																		
Golden plover																		
Greenshank																		
Wood sandpiper																		
Short-eared owl																		
Dunlin																		

Evidence supporting conclusions:

×a	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 104: Caithness and Sutherland Peatlands (UK) Ramsar

Name of European site:	**Caithness and Sutherland Peatlands (UK) Ramsar**
EU Code:	**UK13003**
Distance to Project:	**841.3 km to Export cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Red-throated diver		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Black-throated diver																		
Wigeon																		
Common scoter																		
Hen harrier																		
Golden eagle																		
Merlin																		
Golden plover																		
Greenshank																		
Wood sandpiper																		
Short-eared owl																		
Dunlin																		

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this Ramsar. It is determined that significant effects would not therefore manifest on this distant Ramsar after the likelihood and severity of effects on the Ramsar have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 105: Orkney Mainland Moors (UK) SPA

Name of European site:	**Orkney Mainland Moors (UK) SPA**
EU Code:	**UK9002311**
Distance to Project:	**921.2 km to Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Red-throated diver		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Hen harrier																		
Short-eared owl																		

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 106: Mousa (UK) SPA

Name of European site:	**Mousa (UK) SPA**																			
EU Code:	**UK9002361**																			
Distance to Project:	**1023.8 km to Offshore export cable**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
European storm petrel		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Arctic tern		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		

Evidence supporting conclusions:

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 107: Tips of Corsemaul and Tom Mor (UK) SPA

Name of European site:	**Tips of Corsemaul and Tom Mor (UK) SPA**																			
EU Code:	**UK9002811**																			
Distance to Project:	**154 km to Offshore export cable**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Common gull		×a		×b		×c		×b			×d		×e	×f	×c	×g	×g	×g

Evidence supporting conclusions:

×a	This species has moderate vulnerability to collision risk with turbines (Bradbury et al, 2014). However, Rampion 2 is located a significant distance beyond the mean-maximum foraging range of this species (Woodward et al, 2019) from this SPA. Connectivity during the non-breeding season is limited as birds from this SPA are unlikely to migrate to Rampion 2 during the non-breeding season (Wright et al, 2012). Therefore, LSE can be discounted at this stage.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for this highly-mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms of no LSE. Consequently, LSE can be discounted at this stage.
×c	The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the Construction phase.
×d	This species has very low vulnerability to displacement (the result of avoidance behaviour) (Bradbury et al, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted at this stage.
×e	Evidence from previous offshore wind farms suggests these species are not sensitive to Construction activities. Additionally, the species have low vulnerability to disturbance associated with ship and helicopter movements (Furness et al, 2013 & Fliessbach et al, 2019). LSE can therefore be discounted at this stage.
×f	These species are classified by Bradbury et al, (2014) as having very low vulnerability to displacement by offshore wind farms. Evidence from previous projects suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Therefore, LSE can be discounted at this stage.
×g	No in-combination issues are identified. It is determined that Project impacts would be de minimis to the extent impacts would not amount to a discernible contribution to LSE in-combination with other Project related activities, or external plans or projects.

HRA Screening Matrix 108: North Rona and Sula Sgeir (UK) SPA

Name of European site:	**North Rona and Sula Sgeir (UK) SPA**
EU Code:	**UK9001011**
Distance to Project:	**995.7 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Gannet		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Fulmar																		
Leach's storm petrel																		
European storm petrel																		
Kittiwake																		
Great black-backed gull																		
Guillemot																		
Razorbill																		
Puffin																		

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 109: Ailsa Craig (UK) SPA

Name of European site:	**Ailsa Craig (UK) SPA**
EU Code:	**UK9003091**
Distance to Project:	**355.3 km from Offshore cable corridor**
Likely Effects of Project	

Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Gannet		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a
Herring gull																		
Lesser black-backed gull																		
Kittiwake																		
Guillemot																		

Evidence supporting conclusions:

×a The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 110: Grassholm (UK) SPA

Name of European site:	**Grassholm (UK) SPA**																			
EU Code:	**UK9014041**																			
Distance to Project:	**355.3 km from Offshore cable corridor**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**		
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Gannet		Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa

Evidence supporting conclusions:

Xa	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

HRA Screening Matrix 111: Alderney West Coast and the Burhou Islands (UK) Ramsar

Name of European site:	**Alderney West Coast and the Burhou Islands (UK) Ramsar**																			
EU Code:	**UK1587**																			
Distance to Project:	**148.1 km from array**																			
Likely Effects of Project																				
Effect	**Collision risk**			**Changes in prey availability and behaviour**			**Indirect impacts through the effects on prey species**			**Barrier effect**			**Direct disturbance and displacement**			**In-combination effects**			
Stage of Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**		
Fulmar		×a		×a		×a		×a			×a		×a	×a	×a	×a	×a	×a		
Gannet		✓a		×b		×c		×b			×d		×e	✓b	×c	×f	×f	×f		
Lesser black-backed gull																				
Herring gull																				
Puffin																				
Ringed ploved																				
Common tern																				
Great black-backed gull																				
Cormorant																				
European storm petrel																				

Evidence supporting conclusions:

×a	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.
×b	Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. The pathway to effects due to insufficient prey resource is weak for this highly-mobile receptor. Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Previous experience of other offshore wind farms of no LSE. Consequently, LSE can be discounted at this stage.
×c	The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase.
×d	This species has a significant mean-maximum foraging range with a high degree of habitat flexibility. As a result, any potential additional energetic expenditure as a result of barrier impacts will be trivial. Furthermore, experience of other offshore wind farms is of no LSE being concluded. Therefore, LSE can be discounted at this stage.
×e	This species has very low vulnerability to disturbance associated with vessel and helicopter activity and has a high degree of habitat flexibility (Furness et al, 2013). LSE can therefore be discounted at this stage.
✓a	This species has high vulnerability to collision risk with turbines (Bradbury et al, 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward et al, 2019) from this site. LSE can therefore not be discounted at this stage.
✓b	This species has moderate to high vulnerability to displacement from offshore wind farms (Bradbury et al, 2014). Therefore, LSE cannot be discounted at this stage.
×f	The magnitude of the potential LSE identified (collision risk and disturbance displacement) could act in-combination with other plans and projects, resulting in a greater level of impact than for Rampion 2 alone. These pathways will be considered at Stage 2. No in-combination issues are identified through the amalgamation of non-significant effects.

Appendix B
LR: Changes further to Affected Persons representations

List of changes implemented, following representations from Affected Persons			
Affected Person and if applicable Relevant Representation reference	**Full or Partial Change to cable route, access or construction method adopted**	**Stat consultation ref if applicable**	**Description**
Renny- Brookside caravan park RR-224	Full	AA-04 (second Statutory Consultation)	Alternative access amendment- Construction access facilitated north of the cable corridor to reduce impacts on the caravan park
Langmead	Full		Alternative cable corridor pursued avoids chicken farm business buildings
Norfolk Estate – RR-145	Full	LACR-01 (second Statutory Consultation)	Pursuance of a new Longer Alternative section of cable route (LACR 02) further to consultation responses received from stakeholders including land interest. Final routeing of LACR-01-d was endorsed by the landowner. Route selection in this area is described in **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**.
Angmering Pk Estate RR-022	Full	LACR-01d (second Statutory Consultation)	Alternative cable corridor pursued - Pursuance of a new Longer Alternative section of cable route further to consultation responses received. Route selection in this area is described in in **Chapter 3: Alternatives, Volume 2** of the ES **[APP-044]**.
Kittle REP1-100	Partial	MR-06 (second Statutory Consultation)	Refinement - Movement of the cable closer to field boundary
Kittle REP1-100	Full		Refinement - Access track removed (as a consequence of separate decision to remove the associated PEIR works area)
Douglas & Denton	Partial	MR-06 (second Statutory Consultation)	Modification - Movement of the cable closer to field boundary to lessen impacts on gallops and sinkwell (MR-06)
Cleaver RR 257	Full		Refinement - Cable route altered to avoid planning application for proposed house
The Lorica Trust	Full	AA 12 (second Statutory Consultation)	– Modification Movement of Construction access to minimise impacts on road and pedestrians
Wiston Estate RR-307	Full		Removal of temporary construction compound at Rock farm, due to traffic impacts and land use issues with this option.

Wiston Estate RR-307	Full	MR-08 (second Statutory Consultation)	Modification – Cable route amendment to reduce field severance
Wiston Estate RR-307	Full	AA-14 (second Statutory Consultation)	Alternative construction access added - reducing impacts on agricultural along with some traffic and minerals protection advantages
Artemis Aerospace RR-157	Partial		Refinement - Cable corridor route area refined reducing extent to the north (associated with reroute on neighbouring parcel) and cable corridor was moved slightly closer to the eastern boundary – while maintaining a 25m essential standoff from ancient woodland.
Jim Scott RR-157	Partial		Refinement of boundary to remove a Title from the boundary.
Fischel RR-378	Partial	ACR-06, TC-13, TC-14 (second Statutory Consultation)	Alternative cable corridor pursued – this amended cable route had fewer impacts on environment and land, and fewer engineering challenges
Baird RR-387	Partial)	MR-02 (second Statutory Consultation)	Modification - Extension of DCO red line to allow for movement further west to accommodate West Bank housing development
Crichton-Brown RR-258	Partial)	MR-09 (second Statutory Consultation)	Modification - Amended cable route – results in reduction of agricultural field severance
Crichton-Brown RR-258			Construction access moved predominantly to the field boundary to the north of the driveway, to minimise impact on the driveway
Griffiths RR-003	Full	ACR-07, TC-15, TC-16 (second Statutory Consultation)	Refinement - Amended cable route results in avoidance of agricultural slurry pit
Nash RR- 306	Partial		Refinement - Cable routeing refined to where landowner requested - avoiding slurry and increasing distance between barn and cable construction works amendment of construction and operational accesses to landowner's preference
Leathers	Partial		Amendment to operational access
Kempley	Full		Refinement of construction and operational access
Light RR-273	Partial)		Movement of cable route closer to field boundaries and further from more intensively used equestrian fields

Talbot RR-060	Full		Movement of cable route closer to field boundary
Talbot RR-060	Full/ Removal		Removal of operational access through yard/ main farm entrance. Reduction of PEIR boundary area as a result of substation selection.
Facer RR-398	Partial	MR-13, MR-12 (second Statutory Consultation)	Route refined - moved further away from residential part of the farm.
Ball RR-113	Full		Removal of cable route from land – avoids proximity to dwelling
Chapman RR-402	Partial		Refinement of route – movement of cable route closer to field boundary
Osborne & Wells	Partial		Movement of operational access resulted in the avoidance of a surfaced equestrian track
Ungless	Full/ removed_		Removal further to substation selection
Hardisty & Mcdonagh	Full/ removed_		Removal further to substation selection
Fowler	Full/ removed_		Removal further to substation selection
Henderson & frazer	Full/ removed		Removal further to substation selection
Winfields RR-188	Full/removed		Removal of operational access
Baird RR-387	Full		Removal of construction access from the west of landfall due to highways and landowner impacts (but operational access remains)
Aileen Tizzard, Tarquin & Ruth Taylor RR-335, David Dewdney & Sanda Hewerdine, Justin Moore & Emma Jenkin, Jane Finn, Nicholas & Katherine McLaren	Partial		Amendment of cable route to avoid equestrian (sand school) arena and reduce impact on equine interests.
Claudia Langmead Farming RR-073	Full	AA-25 (Second Statutory Consultation)	Amendment of construction access to avoid running through main farmyard
Fargro Ltd	Full		Removal of Construction access through operational business park/ industrial estate to avoid disruption to existing business storage areas

Muntham Farm LLP/ R Heath RR-260	Full	LAC-01c/ LACR-01d LACR (second statutory consultion)	LACR-01C was de-selected and impacts on clay shoot business operations avoided Alternative cable corridor also resulted in the minimisation of disruption to the farm-
Waller RR-056	Full		Removal of operational access through residential driveway and yard
Alexander Langland Pearce RR-278	Partial		Refinement of cable route to avoid conflict with battery storage proposal
Myatt-Wells RR-397	Full		Removal of operational access
Newman RR-295	Partial		Reduction of PEIR boundary to avoid dwelling.
Shermanbury Grange	Partial		Removal of designated soil storage area

Appendix C
LR: Letter to Mr Lester Aldridge - 21.03.24

EVERSHEDS SUTHERLAND

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DX 14344 Manchester

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Lester Aldridge
Alleyn House
23-27 Carlton Crescent
Southampton
SO15 2EU

Date: 21 March 2024
Our Ref: MOSSMJ\344663.000004
Direct: 441618318523
Email: [redacted]

By E-mail only – Tom.Etherton@LA-Law.com

Dear Sir

Our Client: Rampion Extension Development Limited
The Order: the Proposed Rampion 2 Offshore Wind Farm Order
Your Client: Mr Dickson
The Property: College Wood Farm

We write in response to your letter dated 15 March 2024.

Our client has recently settled its response to your client's Written Representation which was submitted to the Planning Inspectorate yesterday evening. We enclose a copy given that it may take a few days for the Planning Inspectorate to upload the documents onto the examination website. We do not rehearse the detail of the Written Representation response here.

Our client is keen to reach agreement with your client and welcomes the opportunity for Mr Abbott to meet at the Property on 22 March to explain the development proposals, discuss its potential impacts on your client's landholding, understand your client's concerns and proposed alternatives, and explore mitigation measures that might be implemented. Our client has been seeking such a meeting for some time and it wishes to engage constructively.

With regards to the matters raised in paragraphs 5 and 6 of your letter relating to the Equality Act 2010, please identify:

1. Whether your client has a relevant protected characteristic for the purposes of the Equality Act 2010 other than in respect of his age;
2. Why it is considered that the Order gives rise to a differential impact upon persons who share the same relevant protected characteristic(s) with your client;
3. Your client's 'unique circumstances', 'potential limitations' and 'challenges' which you request should be taken into account by our client;
4. The reasonable adjustments which you consider are required to be made;
5. The provisions of the Equality Act 2010 which 'mandate' that those reasonable adjustments should be provided in the context of the relevant protected characteristic(s) held by your client; and
6. Whether there is any part of the Equalities Act Impact Assessment (Equality Statement, Appendix 28.3, Volume 4 to Environmental Statement [APP-221]) which has been undertaken on behalf of our client that is disputed and/or not considered to be adequate.

On the topic of costs, our client will pay your client's reasonably and properly incurred surveyors' and legal fees arising from engaging in negotiations, considering and negotiating the heads of terms, and in relation to the conclusion of any agreement that may be reached pursuant to the same.

This does not extend to paying your client's professional fees that may have been incurred in responding to consultation about the project; or submitting representations in respect of the Order; and/or taking part in the Examination of the Order.

In this regard, we refer you to the government guidance on awards of costs for DCOs which sets out the limited circumstances in which such cost awards may be made: Planning Act 2008: awards of costs - examinations of applications for development consent orders - GOV.UK (www.gov.uk).

Yours faithfully

[redacted]

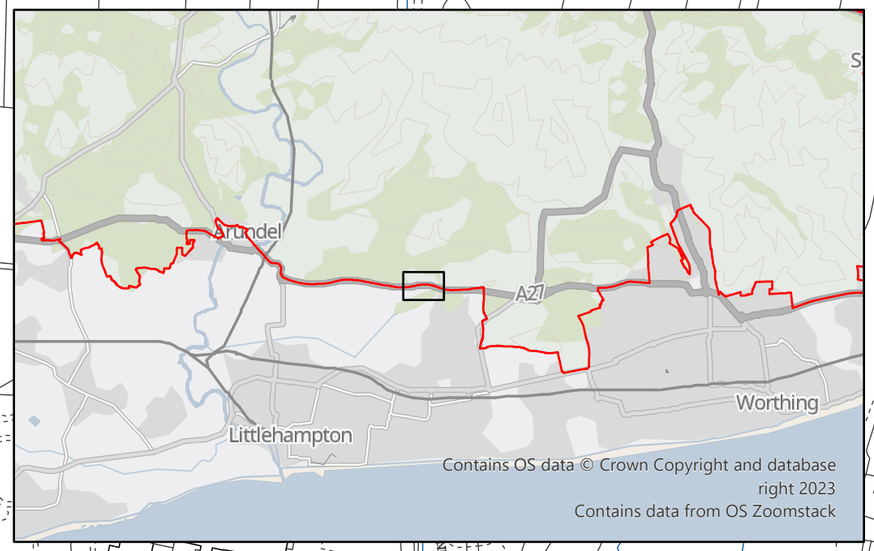
Eversheds Sutherland (International) LLP

Appendix D
LR: SDNP_NH Overlay Plan

Path: M:\Geospatial Projects\J0039831 - Rampion_Extension_Development_Ltd\Mapping\Map Production\ESRI\ArcGIS Pro_Project\J0039831-24 Overlay Plans.aprx

Map Centre 506328E 105730N

0 25 50 75
Metres



Track
Path (um)
Colt Bungalow
South Cottages
Green Lodge
Pond
Track
Drain
A27
Pc
7/3
7/6
7/7
7/9
7/8
7/12
7/13
7/15
7/16
7/18
7/19
7/17
7/5
ARUNDEL ROAD
Spring
The Old Cottage
South View
Home
Hammerpot
43.8m
Post
Oakhurst
Garage
Woodyard
Meadowbank
The Old Stables
DECOY LANE
New Place Farm
Path (um)
Drain
Pond
FB
Track
Collects
Orchard Rough
Spreads

Legend

- National Highways Ltd plots
- South Down National Park (SDNP)

Carter Jonas
Two Snow Hill, Birmingham, B4 6GA
T: 0121 794 6250
carterjonas.co.uk

Client: **Rampion Extension Development Ltd**
Project: **South Down National Park**

Title: **Site Plan**

Scale: 1:2,500 @A3 Date: 08/04/2024
Drawn by: IC Dwg no: **J0039831-24-02**

Appendix E
FR: Oakendene Flood Risk

Rampion 2 Wind Farm

Oakendene Flood Risk and Drainage Applicant Responses

The following Appendix provides responses to Examining Authority Question FR1.2 and FR1.3 in detail, with the support of further information which is contained within the **Annexes**.

1. FR1.2 Drainage Proposals for the Proposed Substation Site at Oakendene (Question for Applicant)

1.1 Examining Authority Question FR1.2

Drainage Proposals for the Proposed Substation Site at Oakendene

Written Representations (WR) were submitted at Deadline 1 from CowfoldvRampion [REP1-087 and REP1-089], Mr Smethurst [REP1-115 to REP1-119] and Ms Davies [REP1-159] regarding flooding and drainage at the proposed substation site at Oakendene. West Sussex CC as the Lead Local Flood Authority made comments regarding flooding at this site expressed in its LIR [REP1-054] and verbally at ISH1.

The Applicant is clearly asked to:

a) *Clearly explain how the proposed drainage from the site would operate at times when the ordinary watercourse to the south of the site is in flood, supporting this with diagrams and calculations:*

b) *Clearly explain whether or not there would be sufficient space for the required calculated storage to ensure no net loss of floodplain storage and to maintain greenfield runoff rates, within the Order Limits, supported with diagrams and calculations.*

c) *Confirm whether or not the deflection or constriction of flood flow routes would be safely managed within the site.*

d) *Provide details of and clearly explain the outcomes from assessments of potential impacts from the Proposed Development to changes to the hydrology of this site on ecology.*

e) *Provide details of any proposed changes to the ground level at this site and how this has been incorporated in the Site-Specific Flood Risk Assessment (FRA) and outline drainage proposals.*

f) *Clearly explain the outcome of the Applicant's assessment of the impact of changes to the drainage regime at this site on the potential flood risk to downstream receptors, supported by clear calculations*

1.2 The Applicant's Response to FR 1.2

Context

1.2.1 The Applicant provided responses to the Written Representations from CowfoldvRampion **[REP1-087** and **REP1-089]**, Mr Smethurst **[REP1-115 to REP1-119]**, Ms Davies **[REP1-159]** and West Sussex County Council (WSCC) **[REP1-054]** in relation to flood risk and drainage concerns at the onshore substation site at Oakendene at Deadline 2. Please see responses 2.18.22 – 2.18.44 to Mr Smethurst in **Deadline 2 Submission – 8.51 Category 8: Examination Documents – Applicant's Response to Affected Parties' Written Representations {REP2-028]** and responses 2.9.1 to 2.9.84 to Ms Davies in **Deadline 2 Submission – 8.52 Category 8: Examination Documents – Applicant's Response to Members of the Public and Businesses' Written Representations [REP2-029]**. Responses to CowfoldvRampion are provided in Appendix A of **Deadline 2 Submission – Category 8: Examination Documents – Applicant's Response to Non-Prescribed Consultees' Written Representations [REP2-030]**. Responses to WSCC are provided in the Response 16 Water Environment section of the **Deadline 2 Submission – 8.43 Category 8: Examination Documents – Applicant's Responses to West Sussex County Council Deadline 1 Submissions [REP2-020]**.

1.2.2 As explained during Issue Specific Hearing (February 2024) and captured in Part 4 (vi) of **Deadline 1 Submission – 8.31 Applicant's Post Hearing Submission – Issue Specific Hearing [REP1-033**] and response to Action Point 20 in **Deadline 1 Submission – 8.25.4 Applicant's Post Hearing Submission – Issue Specific Hearing 1 Appendix 4 – Further Information for Action Point 20 – Oakendene Substation Flood Risk [REP1-023]**, the approach to flood risk and drainage has been precautionary and proportionate to the outline-level of design being applied for at the onshore substation site at Oakendene. The following approach has been undertaken to demonstrate that delivery of a flood compliant scheme, utilising appropriate SuDS, is possible within the proposed DCO Order Limits:

- An Indicative Sustainable Drainage Systems (SuDS) Layout Plan is presented in Appendix A of the **Outline Operational Drainage Plan [APP-223]** (and described in Section 2.4 of that document), which included an over-provision of potential attenuation capacity, and flexibility for delivery (as described in Section 2.4.10 to 2.4.13 and 2.6.1 of that document). The **Outline Operational Drainage Plan [APP-223]** was supported by calculations undertaken using the UKSuDS tool (as referred to in Section 2.3.5 of that document), which provides an upper-estimate for the attenuation volume that is likely to be required at detailed design stage to limit discharges to greenfield run-off rates. For further clarity of the calculations undertaken to support the **Outline Operational Drainage Plan [APP-223]**, the UKSuDS tool output sheets are provided in **Annex A** of this Appendix.
- A precautionary approach was also applied in the application to flood risk from the ordinary watercourse (as set out in Section 5.7.14 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the Environmental Statement (ES) **[APP-216]**, including an approach of avoiding any increases in ground level

within the Environment Agency's Risk of Flooding from Surface Water (RoFSW) 0.1% annual exceedance probability (AEP) extent.

1.2.3 In both cases, the DCO application commits the Applicant to further modelling being undertaken at the detailed design stage (secured via Requirement 17 for the Operational Drainage Plan, and via adherence to National Grid's target guidance for flood resilience in accordance with commitment C-230 (in the **Commitments Register** **[REP1-015]** secured via Requirement 8 (2) within the **Draft Development Consent Order** **[REP2-002]**. This is in compliance with the principles of the **Design and Access Statement** [AS-003]) as secured through Requirement 8 of Schedule 1 of the **Draft Development Consent Order** **[PEPD-009]**) (i.e. neither the attenuation volumes nor flood levels estimated at this stage should be considered final). In practice, it is anticipated that, upon detailed modelling, both the attenuation volumes and flood levels in the ordinary watercourse will be found to be lower than considered in **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** and in the **Outline Operational Drainage Plan** **[APP-223]**.

1.2.4 In order to assist in answering question FR1.2 to the level of detail requested (diagrams and calculations), the Applicant has commenced some of the initial drainage and hydraulic modelling tasks that will contribute towards the detailed design. However, the additional information provided should not be considered in any way to be part of the detailed design. Instead, the additional information seeks to further demonstrate that an appropriate solution to flood risk and drainage matters can be delivered at the detailed design stage, whilst adhering to the design principles set out in **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** and **Outline Operational Drainage Plan** **[APP-223]**, including (as requested in part b of this question), to ensure no net loss of floodplain storage and to maintain greenfield runoff rates.

FR1.2 part a):

a) "Clearly explain how the proposed drainage from the site would operate at times when the ordinary watercourse to the south of the site is in flood, supporting this with diagrams and calculations"

1.2.5 The following response explains how the proposed drainage from the onshore substation site would continue to successfully operate as designed at times when the ordinary watercourse to the south of the site is in flood. As requested, this answer is supported with diagrams and calculations in **Annex A** of this Appendix.

1.2.6 Indicative flood extents associated with the watercourse based on the Environment Agency RoFSW mapping are indicated in **Figure 2** of **Annex B,** with the indicative SuDS layout previously presented separately in the Indicative SuDS Layout Plan (in Appendix A of the **Outline Operational Drainage Plan** **[APP-223]**) now shown on the same figure for clarity. This plan in **Figure 2** of **Annex B** serves to demonstrate that that the SuDS attenuation features have all been indicated as outside of the RoFSW 0.1% AEP extent (used as a proxy for the 1% AEP plus climate change extent).

1.2.7 It is acknowledged that the attenuation basins are indicated on the edge of this flood extent (as shown in **Figure 2** in **Annex B**), and thus that flooding of the

watercourse could potentially result in 'locking' of the discharge point to the watercourse during a flood event (which would likely be in the bank of the watercourse, and thus underwater at times of flood). Therefore, to understand the impact of a flood event on the drainage strategy further, an indicative drainage model of the onshore substation site has been developed using Causeway Flow software to model the proposed drainage system, with a downstream boundary associated with floodwater in the watercourse at the discharge point represented in the model. To determine the downstream boundary, an initial hydrology analysis has been undertaken using the Flood Estimation Handbook (FEH) Revitalised Flood Hydrograph Version 2 (ReFH2) method, to provide an initial design flood flow hydrograph for the Ordinary Watercourse. ReFH2 approach is the best available method for determining the hydrograph shape at this onshore substation site for modelling purposes, including for detailed design. Results of both of these analyses are provided in **Annex A** of this Appendix.

1.2.8 The ReFH2 analysis indicates that the critical storm duration for flood risk associated with the watercourse (i.e. responsible for the most-conservative peak flow) is the 4.5-hour duration event. This is consistent with the small contributing catchment area for the watercourse. The 1% AEP plus 28% 'Higher Central' climate change allowance (for the Environment Agency Adur and Ouse Management Catchment) design hydrograph from ReFH2 was subsequently converted into a flood level hydrograph, to provide a time-varying 'level' boundary. The hydrograph was scaled to fit the indicative Environment Agency RoFSW 0.1% AEP flood extent peak water level (used as a proxy for the 1% AEP plus 28% climate change flood extent) at each of the indicative outfall locations for the basins P2-P4 along the southern boundary of the onshore substation site being modelled in Causeway Flow. These are the indicative flood levels as detailed in the Applicant's response to Action Point 20 in **Deadline 1 Submission – 8.25.4 Applicant's Post Hearing Submission – Issue Specific Hearing 1 Appendix 4 – Further Information for Action Point 20 – Oakendene Substation Flood Risk [REP1-023]**.

1.2.9 This scaling approach is considered precautionary, given the simplistic approach associated with the national scale RoFSW mapping. It is anticipated that, upon detailed modelling of the watercourse (which is to be undertaken at detailed design stage to determine flood resilience to the National Grid Target Guidance flood level, as outlined in the **Design and Access Statement [AS-003]** and secured via Requirement 8 (2) of the **Draft DCO [REP2-002]**) with the inclusion of 1D cross sections for the watercourse, the 1% AEP plus climate change flood water levels would be lower than the 0.1% RoFSW estimates that have been used as a proxy for that event in **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**.

1.2.10 Application of the hydrograph boundary condition (to represent flooding of the watercourse) in a drainage model requires elevations of the various SuDS design features upstream of the flooded watercourse to be represented in the drainage model too, hence the development of initial cross sections presented in **Annex A** of this Appendix. The initial cross sections indicate elevations for the onshore substation platform, the three SuDS attenuation basins adjoining the ordinary watercourse (P2, P3 and P4 from the **Outline Operational Drainage Plan [APP-223]**); existing ground levels (based on LiDAR, including the banks of the watercourse itself); indicative outfall connections/pipes/channels to the

watercourse; and the proxy peak flood water levels from the RoFSW mapping (presenting the peak hydrograph boundary condition determined by scaling the ReFH2 hydrographs discussed above).

1.2.11 As set out in the Applicant's response to Action Point 20 in **Deadline 1 Submission – 8.25.4 Applicant's Post Hearing Submission – Issue Specific Hearing 1 Appendix 4 – Further Information for Action Point 20 – Oakendene Substation Flood Risk [REP1-023]**, the elevation of the onshore substation platform has not been fixed as part of the DCO Application submission, and instead the final elevation(s) will be determined at the detailed design stage, within the parameters of the assessments undertaken in the ES. For ease of interpretation in response to the Examining Authority's question (**FR1.2 a)**), one potential onshore substation platform elevation has been considered, that being the 16.25m above ordnance datum (AOD) elevation referred to in the Applicant's response to Action Point 20 in **Deadline 1 Submission – 8.25.4 Applicant's Post Hearing Submission – Issue Specific Hearing 1 Appendix 4 – Further Information for Action Point 20 – Oakendene Substation Flood Risk [REP1-023]**.

1.2.12 Indicative outfall invert elevations of 13.5m AOD have been assumed for each of the P2-P4 basins based on review of the LiDAR data. These are considered to be suitably precautionary elevations for the outfalls to the ordinary watercourse. The elevations of the attenuation basins, and the degree to which these were represented in the indicative cross sections as excavated or embanked features was then determined based on initial judgement of potential appropriate design, adhering to the design parameter of avoiding any increase in ground elevation (such as an embankment for the attenuation basin) within the 0.1% AEP RoSFW flood extent (used as a proxy for the 1% AEP plus climate change flood extent). The capacities of the basins to be represented in the Causeway Flow modelling were then redetermined based on the cross sections (accounting for 1:3 side slopes and 3m maintenance widths indicated in the cross sections, parameters that are consistent with footnote 1 of Table 2-2 of the **Outline Operational Drainage Plan [APP-223]**).

1.2.13 The scaled hydrographs for the 1% AEP plus climate change event (scaled to the RoFSW 0.1% AEP peak flood level) were then input into the Causeway Flow model to simulate the impacts of a severe flood event within the watercourse upon the ability of the drainage strategy to function as designed, coincident with a 1% AEP plus climate change (rainfall) critical storm event across the onshore substation site.

1.2.14 The Causeway Flow model uses broadly the same input parameters as used in the UKSuDS tool (quick storage) estimates used to support the **Outline Operational Drainage Plan [APP-223]**, but with improved representation associated with the more-detailed modelling approach. One main difference being the representation of the attenuation capacity provided by the 75mm of clean stone gravel and 225mm of MoT type 1 covering approximately 70 percent of the built onshore substation footprint in the Causeway Flow model (as referred to in paragraph 2.4.12 of the **Outline Operational Drainage Plan [APP-223])**. For simplicity of representation in the Causeway Flow model, these have been represented as 100mm of clean stone gravel, of 30% porosity (consistent with paragraph 2.4.12 of the **Outline Operational Drainage Plan [APP-223]**).

1.2.15 Consistent with the approach taken in the **Outline Operational Drainage Plan [APP-223]** (see Table 2-2 and its associated footnotes in that document) Basin P1 has not been represented in the Causeway Flow modelling, but could provide supplementary run-off attenuation capacity if required, subject to the capacity required to address surface water run-on requirements.

1.2.16 The Causeway Flow model has been run for the 1% AEP plus 45% climate change event (model output sheets included in **Annex A** of this Appendix), with discharges at greenfield rates, and no encroachment into the floodplain of the watercourse (as per the Cross Sections included in **Annex A** of this Appendix). The results indicate that there would remain sufficient storage within the attenuation basins to accommodate surface water runoff from the onshore substation site despite a reduced discharge rate when the outfall is submerged (the initial modelling undertaken to support answering this question (FR1.2 a) indicates that the outfalls could be submerged for up to 6-hours considering the 0.1% AEP RoFSW peak level, but that the driving head of water from the basin to the watercourse is sufficient that the basins would still drain during the flood event). It is worth noting that the indicative flood levels for the higher AEP 3.33% AEP and 1% AEP events as shown in the indicative cross sections in **Annex A** are significantly lower than the 0.1% AEP event used in the Causeway Flow model. Therefore, the duration during which the outfalls would be submerged will be significantly lower during a more frequent, lower magnitude event.

1.2.17 The Causeway Flow results indicate that the critical storm duration responsible for the highest peak water levels within basins P2-P4 ranges from 10 to 12-hours, far exceeding the 4.5-hour critical storm duration event for the watercourse as estimated from ReFH2. The results therefore indicate that even considering a coincident 1% AEP plus 40% climate change critical storm event across the site (10-to-12-hour rainfall event) and an upstream 1% AEP plus 28% climate change critical event on the watercourse (4.5 hour rainfall event), there would remain excess storage within the attenuation basins to accommodate runoff from the onshore substation site despite a reduced discharge rate when the outfall is submerged. The provenance of this excess storage is twofold.

1.2.18 Firstly, in reality, the combined probability for a joint probability event such as this would far exceed 1% AEP, given the differences between the critical storm duration associated with peak flood levels on the watercourse and that which is critical in terms of peak flood levels within the attenuation basins.

1.2.19 Secondly, the excess attenuation storage capacity identified at this stage will enable onshore substation platform elevations lower than 16.25m AOD to be considered at the detailed design stage (and for the system to still function effectively during a coincident flood event in the ordinary watercourse). As previously discussed (in paragraph 1.2.9), it is anticipated that upon modelling at the detailed design stage, the design 1% AEP plus climate change peak water level in the ordinary watercourse is likely to be less than what is assumed at this outline design level stage for the DCO Application. This would provide further scope to lower the onshore substation platform elevation beyond that which can be considered now in the absence of detailed hydraulic modelling. This provides further reassurance that the proposed strategy set out in the **Outline Operational Drainage Plan [APP-223]** is precautionary and can be delivered in accordance

with **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** at the detailed design stage.

1.2.20 The results of this conservative analysis described above and shown in **Annex A** indicate that there is significant flexibility within the proposed drainage strategy to account for any impact associated with flooding within the Ordinary Watercourse.

FR1.2 part b)

b) "Clearly explain whether or not there would be sufficient space for the required calculated storage to ensure no net loss of floodplain storage and to maintain greenfield runoff rates, within the Order Limits, supported with diagrams and calculations."

1.2.21 As explained in response to **FR1.2 part a)** of this question above, the indicative additional modelling undertaken (and described above) demonstrates that sufficient space is available within the proposed DCO Order Limits (and in the indicative onshore substation layout plans) to provide the required attenuation storage to maintain runoff at greenfield rates, without any loss of floodplain storage, (even during a concurrent flood event in the ordinary watercourse). Supporting diagrams and calculations are provided in **Annex A** of this Appendix, as set out in response to **FR1.2 part a)** of this question above.

1.2.22 The response to **FR1.2 part a)** of this question above is consistent with the Applicant's previous responses set out in the **Outline Operational Drainage Plan [APP-223]**, responses in **Deadline 1 Submission – 8.25.4 Applicant's Post Hearing Submission – Issue Specific Hearing 1 Appendix 4 – Further Information for Action Point 20 – Oakendene Substation Flood Risk [REP1-023]**, and responses at Deadlines 1 and 2 (i.e. that there would be sufficient space for the required attenuation storage to ensure no net loss of floodplain storage and to maintain greenfield runoff rates, within the proposed DCO Order Limits).

1.2.23 The principle of siting all permanent development, including the attenuation basin footprints, outside of the floodplain is set out in commitment C-75 in Table 8.1 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** and paragraph 2.4.7 of the **Outline Operational Drainage Plan [APP-223]** and will be secured via the stage specific CoCP via Requirement 22 of the **Draft DCO [REP2-002]**. The principle of limiting discharge rates to the greenfield run-off rates is set out in paragraph 8.4.3 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** and paragraph 2.4.2 of the **Outline Operational Drainage Plan [APP-223]**.

1.2.24 The indicative attenuation storage volume required to maintain greenfield runoff rates from the onshore substation site at Oakendene was originally calculated using the UKSuDS tool, as stated in paragraph 2.3.5 of the **Outline Operational Drainage Plan [APP-223]**. An indicative storage volume of 3,800m^3 was estimated to be required, using the design criteria considering flow control to a maximum of Q_{BAR} (or 2 l/s/ha[1], whichever is greater). This volume requirement is

[1] QBAR is a commonly used design standard for drainage design. The units of l/s/ha refers to litres/second/hectare.

indicative and will be recalculated as part of the final Operational Drainage Plan involving detailed modelling in accordance with Requirement 17 of the **Draft Development Consent Order** **[REP2-002]**.

1.2.25 The outline drainage strategy, to provide the indicative 3,800m^3 storage volume, was set out in Section 2.4 of the **Outline Operational Drainage Plan** **[APP-223]**. It was envisaged that the attenuation basins P2-P4 along the southern boundary of the onshore substation footprint will provide a total combined attenuation volume in excess of the indicative 3,800m^3 requirements, as detailed in Table 2-2 of the **Outline Operational Drainage Plan** **[APP-223]**. These basins were sited outside of the Environment Agency RoFSW 0.1% AEP flood extent as shown in **Figure 2** of **Annex B**, which is considered a suitable proxy for the 1% AEP plus climate change event for the watercourse, as agreed with WSCC (stated in paragraph 2.4.7 of the **Outline Operational Drainage Plan** **[APP-223]**).

1.2.26 To support the assertion that sufficient space is available (to provide the required attenuation storage to maintain runoff at greenfield rates, without any loss of floodplain storage), indicative cross sections of the basins in the vicinity of the ordinary watercourse, and indicative peak flood levels in the watercourse have since been produced and provided in **Annex A** (as referred to in answering **FR1.2 part a**). These show the estimated 0.1% AEP RoFSW peak flood level (along with the 1% AEP and 3.33% AEP levels) at each basin, in addition to indicative basin configurations accounting for side slopes and maintenance widths, and the indicative platform level. As demonstrated in the response to **FR1.2 part a)**, basins of sufficient capacity can be delivered within the available space between the southern boundary of the onshore substation footprint and the 0.1% AEP flood extent, in accordance with the indicative design parameters stated in Table 2-2 of the **Outline Operational Drainage Plan** **[APP-223]**. This has further been supported by the Causeway Flow modelling as described in the Applicant's response to **FR1.2 Part a)** above, to demonstrate that there is sufficient attenuation volume available within the basins to maintain runoff at greenfield rates, without any loss of floodplain storage even considering the impacts of a severe flood event within the watercourse south of the onshore substation site.

1.2.27 As discussed in this response above in paragraph 1.2.9, the final attenuation volume requirement will be recalculated as part of the Operational Drainage Plan as secured by Requirement 17 of the **Draft DCO** **[REP2-002]**, supported by detailed modelling of the drainage system at the post DCO detailed design stage. In addition, hydraulic modelling of the watercourse will be undertaken as part of the detailed design to confirm the 1% AEP plus climate change flood extent (the 'design flood,' where an approach of avoidance would be taken to ensure no increase in flood risk elsewhere). The final design of the flood and drainage mitigation measures will be determined at the detailed drainage design stage and are secured via Requirement 17 for surface (and foul) water drainage in the **Draft Development Consent Order** **[REP2-002]**.

FR 1.2 part c)

c) "Confirm whether or not the deflection or constriction of flood flow routes would be safely managed within the site."

1.2.28 The Applicant confirms that the deflection or constriction of flood flow routes would be safely managed within the site, as requested by the Examining Authority.

1.2.29 As addressed in response to **FR1.2 part a)** and **FR1.2 b)** above, it is anticipated that there would be no deflection or constriction of flood flow routes associated with the ordinary watercourse to the south of the onshore substation site. To reiterate, all development, including any raises in ground level, have been indicated outside of the Environment Agency's 0.1% AEP RoFSW flood extent for the ordinary watercourse (as agreed with Horsham District Council and West Sussex County Council to be a suitable proxy for the 1% AEP plus climate change event for the DCO Application). Hydraulic modelling is to be undertaken post DCO consent via Requirement 8 (2) of the **Draft DCO** **[REP2-002]** to inform the detailed design of the onshore substation, which will provide the final 1% AEP plus climate change flood extent for the ordinary watercourse.

1.2.30 The principal approach for the final flood extent for the ordinary watercourse at the detailed design stage will continue to be avoidance (of any development, including any raising of ground levels). If for any reason avoidance is not possible, then the detailed design will manage any increase in flood risk within the proposed DCO Order Limits, to ensure that the conclusions of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** remain valid, and/or demonstrate that any change in flood risk elsewhere does not impact any potential flood risk receptors.

1.2.31 The management of other surface water flow pathways at the onshore substation site at Oakendene have been considered as part of the Indicative Drainage Layout. Measures have been indicated in the Indicative SuDS Plan (provided in Appendix A of **Outline Operational Drainage Plan** **[APP-223]**) specifically to manage the flow pathways as part of the Drainage Strategy, such that any deflection and/or constriction is intentional to safely manage flows within the onshore substation site (to reduce flood risk in parts of the onshore substation site to be developed for other uses), and to avoid any increase in flood risk elsewhere. The final design of the flood and drainage mitigation measures (including where intentional deflection and/or constriction of surface water flow pathways would be implemented to manage surface water) will be determined at the detailed drainage design stage, and are secured via Requirement 17 for surface (and foul) water drainage in the **Draft Development Consent Order** **[REP2-002]**.

FR1.2 Part d)

d) "Provide details of and clearly explain the outcomes from assessments of potential impacts from the Proposed Development to changes to the hydrology of this site on ecology."

1.2.32 The following response provides details of and explains the outcomes from assessments of potential impacts from the Proposed Development to changes to the hydrology of this site on ecology.

1.2.33 The overall assessment of likely significant effects during the construction and operation of the onshore substation site at Oakendene was provided in **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]** Table 26-27 and Table 26-29 of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**

considered each of the relevant construction and operation and maintenance activities and their potential effects, whilst taking into associated embedded environmental measures as part of the water environment assessment. This included consideration of changes in water quantity and quality during the construction phase and operation and maintenance phase as summarised below.

Construction phase

1.2.34 During the construction phase, the following activities and potential effects were considered in Table 26-27 of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**:

- Changes in runoff rates and new flow pathways and new runoff rates and pathways associated with ground disturbance and the development of temporary construction compound areas and onshore substation search areas;
- A decline in groundwater levels arising from of the trenched excavations for the onshore substation or piling if it is required for the installation of subsurface foundations;
- Potential for accidental contamination entering groundwater or watercourses, associated with spillage or leakage of fuels, lubricants or other chemicals. Ground disturbance and mobilisation of sediments/ contaminants leading to silt laden or otherwise contaminated runoff entering watercourses, and
- Increases in flow in watercourses due to dewatering of excavations;

1.2.35 Numerous embedded environmental measures are relevant to addressing these effects, including, but not limited to,

- C-11 Soil Storage, C-21 Vegetation Removal and C-27 Reinstatement;
- C-73, C-74 and C-140 Drainage Design (SuDS);
- C-75 Floodplain Avoidance;
- C-77, C-134 and C-141 Dewatering;
- C-118 Emergency Flood Response Plan;
- C-120, C-121 and C129 Working Area Construction;
- C-130 and C-179 Soil Stockpile Placement;
- C-144 and C-175 Access Track Design;
- C-152 Piling Risk Assessment;
- C-182 Ordinary Watercourse Consent Requirements; and
- C-8, C-76, C-149 C-150, C-151, C-167, C-227, C-234, C-235, C-236 and C-241 Pollution Prevention.

1.2.36 These embedded environmental measures are set out in the **Outline Code of Construction Practice** **[PEPD-033]** and are secured as part of the Construction Phase Drainage Plan which will be delivered at the post-DCO award detailed

design stage via Requirement 22 c) of the **Draft Development Consent Order [REP2-002]**.

1.2.37 Following implementation of the embedded environmental measures including the **Outline Code of Construction Practice [PEPD-033]**, Table 26-27 in **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]** concludes that there will be negligible to low magnitude (i.e. not significant) adverse effects on the water quantity or quality of surface water or groundwater receptors during the construction of the onshore substation at Oakendene. No adverse effects on ecology were therefore predicted during construction (in relation to hydrology) within **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**.

Operation and maintenance phase

1.2.38 During the operation and maintenance phase, the following activities and potential effects were considered in Table 26-29 of **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]**:

- A reduction in groundwater levels arising from the presence of a below ground grid, onshore substation support structures and impermeable surfaces;
- Potential for accidental contamination entering groundwater or watercourses, associated with spillage or leakage of fuels, lubricants or other chemicals during occasional maintenance visits; and
- Changes in runoff rates and new flow pathways associated with the impermeable onshore substation footprint.

1.2.39 Numerous embedded environmental measures are relevant to addressing these effects, including, but not limited to

- C-73, C-74 and C-140 Drainage Design (SuDS);
- C-8, C-149, C-151, C-153 and C-167 Pollution Prevention; and
- C-230 Adherence to National Grid Target Guidance for Flood Resilience.

1.2.40 The Indicative SuDS Plan in Appendix A of the **Outline Operational Drainage Plan [APP-223]** has been developed as part of a holistic project approach that has brought together ecological and hydrological mitigation in an integrated plan. An example of this is the inclusion of wet woodland in each of the attenuation basins and the incorporation of vegetation with wet tolerant grassland species mix within the swale. The **Outline Operational Drainage Plan [APP-223]** indicates that the Indicative SuDS Plan would attenuate runoff from the Site to greenfield runoff rates (QBAR or 2l/s whichever is lower) during the operation and maintenance phase. On this basis, there would be no adverse impact on the baseline hydrological regime in terms of water quantity during the operation of the onshore substation at Oakendene towards ecological receptors.

1.2.41 Similarly, the delivery of SuDS on-site as part of the Indicative SuDS Plan in Appendix A of the **Outline Operational Drainage Plan [APP-223]** includes for the provision of suitable water quality treatment prior to discharge to the southern ordinary watercourse. On this basis, there would be no adverse impact on the

baseline hydrological regime in terms of water quality during the operation of the onshore substation at Oakendene towards ecological receptors.

1.2.42 Following implementation of embedded mitigation measures including the Operational Drainage Plan secured via Requirement 17 of the **Draft Development Consent Order** **[REP2-002]**, Table 26-29 in **Chapter 26: Water environment, Volume 2** of the ES **[APP-067]** concludes that there will be negligible (i.e. not significant) adverse effects on the water quantity or quality of surface water or groundwater receptors during the operation and maintenance phase of the onshore substation at Oakendene. No adverse effects on ecology were therefore predicted during the operation and maintenance phase (in relation to hydrology) within **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES **[APP-063]**.

FR1.2 Part e)

e) "Provide details of any proposed changes to the ground level at this site and how this has been incorporated in the Site-Specific Flood Risk Assessment (FRA) and outline drainage proposals."

1.2.43 The main changes to the ground level at the onshore substation site at Oakendene will be the creation of a level platform for the onshore substation site and the construction of SuDS drainage features. The following response provides details of any proposed changes to the ground level at the onshore substation site at Oakendene and how this has been incorporated in the Site-Specific Flood Risk Assessment (FRA) and outline drainage proposals.

1.2.44 As set out in section 5.7.14 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**, it was agreed with West Sussex County Council and Horsham District Council that the 0.1% Annual Exceedance Probability (AEP) surface water flood extent (defined by the Environment Agency's RoFSW mapping) provided a suitably precautionary proxy for the one percent AEP plus 28 percent flood extent for the minor watercourse, and that avoidance of development within this flood extent would be an acceptable approach for the Flood Risk Assessment. The drainage proposals set out in Appendix A of the **Outline Operational Drainage Plan** **[APP-223]** were also situated outside of the 0.1% AEP extent as is clearly illustrated in **Figure 2** in **Annex B** of this Appendix.

1.2.45 As discussed in the Applicant's response to **FR1.2 Part b)** above in **paragraph 1.2.27**, hydraulic modelling of the watercourse will be undertaken as part of the detailed design. This will be to confirm the 1% AEP plus climate change flood extent (the 'design flood,' where an approach of avoidance would be taken to ensure no increase in flood risk elsewhere), as well as to determine the 0.1% AEP plus climate change plus 300mm flood level (the National Grid target guidance), to be used for considering flood risk to the onshore substation for flood resilience purposes (in accordance with commitment C-230 (in the **Commitments Register** **[REP1-015]** and in compliance with the principles of the **Design and Access Statement** **[AS-003]**) as secured through Requirement 8 of Schedule 1 of the **Draft Development Consent Order** **[REP2-002]**.

1.2.46 Any changes in site levels in relation to the construction of onshore substation footprint platform and drainage basins will therefore be sited outside of the

floodplain. The onshore substation platform construction will involve a process of cutting and filling and the exact platform site levels will be determined at the detailed design stage in accordance with Requirement 8 which is for Detailed design approval of the onshore substation within the **Draft Development Consent Order** **[REP2-002]**. This matter was discussed further in **Deadline 1 Submission – 8.25.4 Applicant's Post Hearing Submission – Issue Specific Hearing 1 Appendix 4 – Further Information for Action Point 20 – Oakendene Substation Flood Risk** **[REP1-023]**. Table 1 of Action Point 20 set out that the final the onshore substation platform level would be somewhere between the 0.1% AEP RoFSW extent peak water level for the ordinary watercourse to the south (14.71m AOD), and an assumed upper level of around 16.25m AOD.

1.2.47 This is illustrated in the indicative cross sections provided in **Annex A** of this Appendix, showing the indicative flood levels based on the Environment Agency RoFSW mapping, indicative basin configuration and indicative onshore substation platform level of 16.25m AOD, confirming that all land raising associated with the onshore substation will be situated outside of the floodplain.

FR1.2 Part f)

f) "Clearly explain the outcome of the Applicant's assessment of the impact of changes to the drainage regime at this site on the potential flood risk to downstream receptors, supported by clear calculations"

1.2.48 The following response explains the outcome of the Applicant's assessment of the impact of changes to the drainage regime at this site on the potential flood risk to downstream receptors, supported by clear calculations.

1.2.49 As set out in paragraphs 6.5.16 and 8.4.3 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** and Paragraphs 2.3.5-2.3.6 of the **Outline Operational Drainage Plan** **[APP-223]**, surface water runoff from the onshore substation site will be limited to greenfield Q_{BAR} rates or 2 l/s (whichever is greater). Section 2.4 of the **Outline Operational Drainage Plan** **[APP-223]** sets out the outline strategy for the management of surface water across the onshore substation site, accompanied by the Indicative SuDS Plan in Appendix A **[APP-223]**. The impact of changes to the drainage regime at the onshore substation site at Oakendene would therefore be to reduce flood risk to potential downstream receptors.

1.2.50 As set out in Section 2.3 of the **Outline Operational Drainage Plan** **[APP-223]**, greenfield runoff rates and the storage volume estimation were calculated using ReFH2 and the UKSuDS tools. The UKSuDS tool allows for inputs to be provided by ReFH2, and outputs from the tool are provided in **Annex A** of this technical note document for completeness.

1.2.51 Table 2-1 of the **Outline Operational Drainage Plan** **[APP-223]** presents the greenfield runoff rates for the onshore substation site calculated from ReFH2, and these are repeated under the 'Flow inputs' header of the UKSuDS output. However, it should be noted in Table 2-1 that the Q_{MED} (1 in 2) runoff rate of 52.64 l/s has been erroneously labelled as the Q_{BAR} runoff rate (1 in 2.3). In addition, the UKSuDS tool output sheets erroneously labels this Q_{BAR} value as 'Q1' under the 'Flow inputs' rather than 'Q_{MED}' (this is an error in the UKSuDS tool itself – Q1 is

repeated, and the second-row value of 45.9 l/s is correct, matching that in Table 2-1). Table 2-1 of the **Outline Operational Drainage Plan [APP-223]** has been updated for Deadline 3 to correct the labelling.

1.2.52 The UKSuDS tool takes the ReFH2 Q_{MED} input of 52.64 l/s and calculates an estimated Q_{BAR} value of 59.75 l/s provided in the UKSuDS output, given that ReFH2 does not output Q_{BAR} with a return period of 2.3 years.

1.2.53 The resulting post-development runoff rates for the onshore substation site for the Q1, Q30 and Q100 events are provided under the 'Site discharge rates' header of the UKSuDS output sheet in **Annex A** of this Appendix (taking into account the storage volume requirement) of the UKSuDS output. These discharges demonstrate that in extreme magnitude events site discharges are limited to the Q_{BAR} rate of 59.75 l/s (rounded to 59.8).

2. FR1.3 Flood Risk at the Proposed Substation site at Oakendene (Question for Applicant)

2.1 Examining Authority Question FR 1.3

"Flood Risk at the Proposed Substation site at Oakendene
The Flood Risk Assessment [APP-216] states that the proposed substation site at Oakendene is within Flood Zone 1 and this was confirmed by the Applicant during questioning at ISH1 [EV3-001] whilst Mr Smethurst believes the site falls within Flood Zone 3 [REP1-115]. Figure 26.2.2 in the Flood Risk Assessment [APP-216] shows which areas of the whole of the Proposed Development fall within various flood zones in Figure 26.2.2 but the ExA considers it difficult to see any detail at this scale for the proposed Oakendene substation site

For transparency, submit clear evidence into the examination, through a zoomed in plan, together with explanation to clearly demonstrate which flood zone(s) the proposed substation at Oakendene falls within and clearly explain:

a) *The definition of flood zones 1, 2, 3a and 3b, particularly differentiating between zones 3a and 3b.*

b) *The definition of Risk of Flooding from Surface Water (RoFSW).*

c) *How the proposed substation site at Oakendene site is located in respect to all sources of flooding."*

2.2 The Applicant's Response to FR 1.3

Context

2.2.1 The Examining Authority's question FR1.3 opens with text providing the context for the question. The applicant can understand how Mr Smethurst came to the belief that the site falls within a Flood Zone, and agree that provision of a new zoomed in figure would assist in providing clarification in this regard. This new figure is provided in **Figure 1** in **Annex B**, which confirms that the substation site is entirely located in Flood Zone 1. Other clear evidence has also been provided as requested.

FR 1.3 Part a)

2.2.2 The following response provides the definition of flood zones 1, 2, 3a and 3b as requested by the Examining Authority. The definitions of Environment Agency Flood Zones, as defined in the National Planning Policy Framework (NPPF)[2] are provided in Table 1-2 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**. For ease of reference, the definitions have been reissued in **Table 1** below.

Table 1 Annual probability and Flood Zone definitions

Flood Zone	Flood Zone Definition	AEP	Annual probability
Flood Zone 1: Low probability	Land having less than a 1 in 1,000 annual probability of river or sea flooding.	<0.1%	<1 in 1000
Flood Zone 2: Medium probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.	0.1%	1 in 1,000
Flood Zone 3a: High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.	1% (fluvial) 0.5% (tidal)	1 in 100 (fluvial) 1 in 200 (tidal)

[2] Ministry of Housing, Communities & Local Government, (2021). *National Planning Policy Framework*. [online]. Available at: https://www.gov.uk/government/publications/nationalplanning-policy-framework--2 [Accessed 11 April 2024].

Flood Zone	Flood Zone Definition	AEP	Annual probability
Flood Zone 3b: Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency.	5%*	1 in 20*

* The 5% AEP (or 1 in 20 annual probability) event is often used to help define Flood Zone 3b, the 'functional floodplain', but is not part of the definition.

2.2.3 As requested, a new zoomed in plan for the onshore substation site at Oakendene and its surrounding area is included as **Figure 1** in **Annex B** of this Appendix. As shown in **Figure 1**, the onshore substation site at Oakendene falls entirely within Environment Agency Flood Zone 1, which is defined as '*land having less than a 1 in 1,000 annual probability of river or sea flooding*'. Flood Zone 1 is the zone considered to be at lowest probability of flooding from rivers and the sea (compared to Flood Zones 2 and 3).

2.2.4 In line with **Paragraph 2.2.3**, a zoomed in plan for the substation Oakendene was not provided in **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** as there is negligible spatial overlap with the Flood Zones and the proposed DCO Order Limits in the vicinity of the onshore substation site. Furthermore, the plan in **Figure 1** of **Annex B** in this Appendix indicates a lower probability of flood risk at the onshore substation site than the Applicant considers representative of the characteristics at the onshore substation site at Oakendene given the proximity of the ordinary watercourse along the southern boundary.

2.2.5 Instead, the precautionary approach taken in **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** was to acknowledge that the lack of any Flood Zone 2 or 3 definition associated with the ordinary watercourse to the south of the onshore substation site at Oakendene was a function of the Environment Agency's approach to modelling of the watercourse network (and excluding representation of the Ordinary Watercourse), rather than there not being any flood risk from the watercourse. Therefore, the only zoomed in plan included in **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** at the onshore substation site at Oakendene was for the Environment Agency's Risk of Flooding from Surface Water mapping.

2.2.6 With respect to the definition of Flood Zone 3b (also known as the functional floodplain), the formal national definition is provided in Table 1-2 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** and repeated in **Table 1** above. The national definition acknowledges that Local Planning Authorities should identify Flood Zone 3b in their Strategic Flood Risk Assessments. The approach to defining Flood Zone 3b varies between Local Planning Authorities. Horsham District Council define Flood Zone 3b as the 5% AEP event, as provided in the 2020 Strategic Flood Risk Assessment (SFRA). The

definition of Flood Zone 3b within the River Adur (eastern branch) catchment is discussed further in Paragraph 5.2.24 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**.

2.2.7 Ultimately, Flood Zone 3b (in addition to Flood Zone 2 and 3) has not been formally defined in Horsham District Council's 2020 SFRA for the Ordinary Watercourse south of the onshore substation site at Oakendene. This is because the watercourse has not been modelled as part of the Environment Agency's Cowfold Stream and River Adur eastern branch modelling studies. Hence, the Environment Agency Flood Zones are not mapped in detail in the SFRA at this location, and therefore could not be presented in **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**.

2.2.8 As stated in paragraph 5.7.11 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** where no fluvial modelling exists (smaller watercourses), the 0.1 percent AEP RoFSW extents have been used as a proxy for the fluvial risk during the one percent AEP plus climate change event. It was agreed during a stakeholder engagement meeting on 22 June 2022 with Horsham District Council's flood officer and West Sussex County Council's Lead Local Flood Authority representative, that the Environment Agency Risk of Flooding from Surface Water extents can be used as a proxy for the Flood Zone definitions in this instance, as discussed in the meeting minutes within Annex A of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**.

2.2.9 The Environment Agency Risk of Flooding from Surface Water extents were presented in Figure 26.2.6a of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** and **Figure 2** provided in **Annex B** of this Appendix reproduces this, but with the addition of the indicative SuDS features, to demonstrate that those features have been located outside of the flood extent (to assist in answering question **FR 1.2 part b** (above) and **FR 1.3 part b** (below). In this instance, we suggest that the 3.33% AEP RoFSW extent can be used as a proxy for Flood Zone 3b (as the closest magnitude event to the 5% AEP definition), and the 1% AEP and 0.1% AEP extents can be used as proxies for Flood Zones 3 and 2, respectively (with the 0.1% AEP extent also providing a proxy for the 1% AEP plus climate change extent, as discussed previously).

FR 1.3 Part b)

2.2.10 The following response provide the definition of Risk of Flooding from Surface Water (RoFSW) as requested by the Examining Authority. Spatial definition of the RoFSW zones is provided in Figures 26.2.5 and 26.2.6 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**. In responding to question **FR 1.2 part b** (above), the Applicant has also prepared **Figure 2** (provided in **Annex B** of this Appendix), which includes the indicative SuDS features (which were presented in Appendix A: Oakendene Onshore Substation – Indicative SuDS Plan of the **Outline Operational Drainage Plan** **[APP-223]** alongside the RoFSW flood extents.

2.2.11 The definitions of each RoFSW Zone in terms of annual exceedance probability (AEP) and probability of flooding are provided in **Table 2** below.

Table 2 RoFSW zone definition

RoFSW Zone (AEP)	Risk
<0.1% (> 1 in 1,000)	Very Low
1% - 0.1% (1 in 100 – 1,000)	Low
3.33% - 1% (1 in 30 – 100)	Medium
≥ 3.33% (≤ 1 in 30)	High

FR 1.3 Part c)

2.2.12 The following response provides an explanation of how the onshore substation site at Oakendene is located in respect to all sources of flooding as requested by the Examining Authority. For ease of understanding, the flood risk screening table provided in Table 5-1 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** has been adapted, and reapplied specifically to onshore substation site at Oakendene and presented in **Table 3** below. Where a flood source is present, the associated flood risk is considered further in the following paragraphs with reference to relevant sections of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** and wider material.

Table 3 Onshore substation site at Oakendene – site specific flood risk screening presented for the purposes of responding to Question FR1.3

Flooding source	Comments	Source present
Tidal	The site is situated approximately 18km inland at an elevation above 14mAOD. Therefore, there is no source of tidal flood risk at the site.	✗
Fluvial	The substation site is situated in Flood Zone 1, though is bordered by an Ordinary Watercourse (tributary of the Cowfold Stream) to the south, which poses a potential fluvial flood risk to the site, and was thus considered further in the FRA. Fluvial flood risk at the Oakendene onshore substation site is discussed further below.	✓
Surface water	The substation site is intersected by several surface water flowpaths as indicated in the Environment Agency RoFSW mapping, and was thus considered	✓

Flooding source	Comments	Source present
	further in the FRA. Surface water flood risk at the Oakendene onshore substation site is discussed further below.	
Sewer	Owing to the site's rural location, sewers networks are unlikely to pose a significant source of flooding to the site.	✗
Groundwater	As indicated in the British Geological Survey (BGS) mapping, the site is underlain by Weald Clay formation with low permeability and classified as 'Unproductive Strata' in the BGS aquifer designation mapping (unlikely to harbour significant volumes of groundwater). On this basis, risk of groundwater flooding at the onshore substation site at Oakendene was screened out of the FRA. However, to allay concerns raised by West Sussex County Council in their Principal Areas of Disagreement (Reference 48 in WSCC Principal Areas of Disagreement Statement [AS-008]) regarding the potential for perched groundwater not being verified by ground investigation ahead of the application submission, this potential source of flooding has, in effect, retrospectively been screened in at the onshore substation site at Oakendene, as discussed further below.	✗/✓
Artificial sources	The site is not within the breach flood extents of the Environment Agency's risk of flooding from reservoirs mapping, and there are no other artificial or raised bodies of water in the vicinity that could pose a flood risk to the site in the event of a breach.	✗

2.2.13 With respect to fluvial flood risk associated with the Ordinary Watercourse to the south of the onshore substation site at Oakendene, this is discussed in paragraphs 5.2.25, 5.7.14 and 8.4.6 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**. As shown in Figure 26.2.6a of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** and **Figure 2** provided in **Annex B** of this Appendix, the onshore substation footprint and associated indicative SuDS features (as were indicated in Appendix A of the **Outline Operational Drainage Plan [APP-223]** are situated outside of the 0.1% AEP extent associated with the Ordinary Watercourse (used as a proxy for the design 1% AEP plus climate change event and applied in the FRA). The onshore substation is therefore considered to be in Flood Zone 1, at low risk of fluvial flooding in accordance with the definitions provided in **Table 1**.

2.2.14 With respect to surface water flood risk, assessment of flood risk at the onshore substation site is discussed in Section 5.3 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**. Paragraph 5.3.13 notes that several surface water flowpaths intersect the onshore substation site from north to south, with associated 'high' risk extents (corresponding to the 3.33% AEP extent) as mapped in Figure 26.2.6a of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** and **Figure 2** in **Annex B** of this Appendix. Assessment of surface water flood risk is detailed further in paragraph 6.5.4 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**, which notes that the **Outline Operational Drainage Plan** **[APP-223]** has been designed to capture, convey and manage surface water run-on at the site and surface water run-off, as secured through Requirement 17 of the **Draft Development Consent Order** **[REP2-002]**. In addition, paragraph 6.5.5 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** notes that the onshore substation will adhere to the National Grid target guidance for flood protection[3], providing flood resilience to a level equivalent of the 0.1% AEP plus climate change event in addition to a 300mm freeboard allowance. Following the implementation of these management measures, surface water flood risk at the site would be low.

2.2.15 With respect to groundwater flood risk, reference has been made in paragraph 5.5.7 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]** to GeoSmart groundwater flood risk data presented in the Horsham District Council SFRA, which indicates negligible risk of flooding from this groundwater at the onshore substation site. This is consistent with the underlying geology of Wealden Clay, discussed in Sections 3.6 and 3.7 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**. This assessment (negligible risk of flooding from this groundwater at the onshore substation site) has been further validated as part of this response with reference to flow data at the Environment Agency river flow monitoring station on the River Adur eastern branch at Sakeham[4]. The flow series data is typical of a 'flashy' catchment as a result of the dominant clay geology within the catchment (which includes the onshore substation site) and suggests that groundwater baseflows are negligible within the upstream catchment. This is in contrast to an Environment Agency flow monitoring station at Sullington Chantry[5] adjacent to Washington, which is within an area of elevated groundwater flood risk as identified in paragraphs 5.5.6 to 5.5.11 of **Appendix 26.2: Flood Risk Assessment, Volume 4** of the ES **[APP-216]**. The flow series data is indicative of a groundwater dominated catchment, with typical slow response to rainfall and in general elevated flows throughout the winter months.

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[3] National Grid, (2016). *Flood defences for Electricity Substations. TS 2.10.13 – Issue 2*. London; National Grid.

[4] DEFRA (2024) *Hydrology Data Explorer: Sakeham Daily Mean Flow* https://environment.data.gov.uk/hydrology/station/4b7037a6-a12f-4648-9923-cc7583262bae, accessed 22 April 2024

[5] DEFRA (2024) *Hydrology Data Explorer: Sullington Chantry Daily Mean Flow* https://environment.data.gov.uk/hydrology/station/59abc346-440f-4d10-8da5-53d254437b98, accessed 22 April 2024

2.2.16 However, to allay concerns in relation to the potential for perched groundwater raised by West Sussex County Council in their Principal Areas of Disagreement **[AS-008]**, this potential source has, in effect, retrospectively been screened in and will inform the detailed design proposals at the onshore substation site on a precautionary basis. This retrospective screening in of potential flood risk from perched groundwater was to enable a commitment in relation to limited groundwater monitoring at the detailed design stage to be incorporated into the Operational Drainage Plan for the onshore substation site as per Requirement 8 (2) and 17 of the **Draft Development Consent Order** **[REP2-002]**. The principle of such a commitment (to undertake limited monitoring of groundwater levels at the time of wider ground investigation works at detailed design stage) has been discussed and provisionally agreed with West Sussex County Council and Horsham District Council. Commitment C-293 has been included and states that "*RED will undertake ground investigation at the substation site at the detailed design stage, including groundwater monitoring in at least one appropriate location in close proximity to the watercourse to the south of the site, for one winter period (September to April). This would be carried out to inform the detailed design of the substation, including design of the drainage system and its associated landscaping and planting measures*." The measure is within the latest version of the **Commitments Register** **[REP1-015]** and **Design and Access Statement** **[AS-003],** and **Outline Operational Drainage Plan** **[APP-223]** both being updated at Deadline 3, and is secured via Requirement 8 (2) and 17 of the **Draft Development Consent Order** **[REP2-002]**.

Annex A
Supporting Information for FR1.2 (Diagrams and Calculations)

Calculations – REFH2

UK Design Flood Estimation

Generated on Tuesday, April 16, 2024 3:47:11 PM by UKJXP781
Printed from the ReFH2 Flood Modelling software package, version 4.0.8560.23190

Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH2)

Site details Checksum: C2EA-88BB

Site name: FEH_Catchment_Descriptors_522800_122200_v5_0_1

Easting: 522800

Northing: 122200

Country: England, Wales or Northern Ireland

Catchment Area (km²): 1.67 [1.93]*

Using plot scale calculations: No

Model: 2.3

Site description: None

Model run: 100 year 1.28 CC

Summary of results

Rainfall - FEH22 (mm):	81.81	Total runoff (ML):	69.95
Total Rainfall (mm):	56.00	Total flow (ML):	93.64
Peak Rainfall (mm):	15.23	Peak flow (m³/s):	4.37

Parameters

Where the user has overriden a system-generated value, this original value is shown in square brackets after the value used.
** Indicates that the user locked the duration/timestep*

Rainfall parameters (Rainfall - FEH22)

Name	Value	User-defined?
Duration (hh:mm:ss)	04:30:00	No
Timestep (hh:mm:ss)	00:30:00	No
SCF (Seasonal correction factor)	0.7	No
ARF (Areal reduction factor)	0.97	No
Seasonality	Winter	No
Climate change factor	1.28	Yes

Loss model parameters

Name	Value	User-defined?
Cini (mm)	141.55	No
Cmax (mm)	226.72	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	2.34	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m^3/s)	0.1	No
BL (hr)	23.82	No
BR	0.34	No

Urbanisation parameters

Name	Value	User-defined?
Sewer capacity (m^3/s)	0	No
Exporting drained area (km^2)	0	No
Urban area (km^2)	0	No
Urbext 2000	0	No
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No

Time series data

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m^3/s)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
00:00:00	1.600	0.000	1.005	0.000	0.096	0.096
00:30:00	3.003	0.000	1.916	0.014	0.094	0.107
01:00:00	5.583	0.000	3.668	0.068	0.092	0.160
01:30:00	10.200	0.000	7.056	0.198	0.091	0.289
02:00:00	15.231	0.000	11.391	0.476	0.091	0.568
02:30:00	10.200	0.000	8.200	1.005	0.095	1.100
03:00:00	5.583	0.000	4.683	1.768	0.103	1.870
03:30:00	3.003	0.000	2.576	2.630	0.116	2.745
04:00:00	1.600	0.000	1.389	3.442	0.135	3.577
04:30:00	0.000	0.000	0.000	4.027	0.158	4.185
05:00:00	0.000	0.000	0.000	4.188	0.184	4.372
05:30:00	0.000	0.000	0.000	3.977	0.208	4.185
06:00:00	0.000	0.000	0.000	3.550	0.230	3.781
06:30:00	0.000	0.000	0.000	3.030	0.249	3.279
07:00:00	0.000	0.000	0.000	2.509	0.263	2.772
07:30:00	0.000	0.000	0.000	2.067	0.273	2.340
08:00:00	0.000	0.000	0.000	1.694	0.281	1.974
08:30:00	0.000	0.000	0.000	1.361	0.286	1.647
09:00:00	0.000	0.000	0.000	1.055	0.288	1.343
09:30:00	0.000	0.000	0.000	0.772	0.289	1.060
10:00:00	0.000	0.000	0.000	0.511	0.287	0.798
10:30:00	0.000	0.000	0.000	0.292	0.284	0.576
11:00:00	0.000	0.000	0.000	0.143	0.280	0.422
11:30:00	0.000	0.000	0.000	0.060	0.274	0.335
12:00:00	0.000	0.000	0.000	0.020	0.269	0.289
12:30:00	0.000	0.000	0.000	0.004	0.264	0.267
13:00:00	0.000	0.000	0.000	0.000	0.258	0.258
13:30:00	0.000	0.000	0.000	0.000	0.253	0.253
14:00:00	0.000	0.000	0.000	0.000	0.247	0.247
14:30:00	0.000	0.000	0.000	0.000	0.242	0.242
15:00:00	0.000	0.000	0.000	0.000	0.237	0.237
15:30:00	0.000	0.000	0.000	0.000	0.232	0.232
16:00:00	0.000	0.000	0.000	0.000	0.228	0.228
16:30:00	0.000	0.000	0.000	0.000	0.223	0.223
17:00:00	0.000	0.000	0.000	0.000	0.218	0.218

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m^3/s)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
17:30:00	0.000	0.000	0.000	0.000	0.214	0.214
18:00:00	0.000	0.000	0.000	0.000	0.209	0.209
18:30:00	0.000	0.000	0.000	0.000	0.205	0.205
19:00:00	0.000	0.000	0.000	0.000	0.201	0.201
19:30:00	0.000	0.000	0.000	0.000	0.196	0.196
20:00:00	0.000	0.000	0.000	0.000	0.192	0.192
20:30:00	0.000	0.000	0.000	0.000	0.188	0.188
21:00:00	0.000	0.000	0.000	0.000	0.184	0.184
21:30:00	0.000	0.000	0.000	0.000	0.181	0.181
22:00:00	0.000	0.000	0.000	0.000	0.177	0.177
22:30:00	0.000	0.000	0.000	0.000	0.173	0.173
23:00:00	0.000	0.000	0.000	0.000	0.170	0.170
23:30:00	0.000	0.000	0.000	0.000	0.166	0.166
24:00:00	0.000	0.000	0.000	0.000	0.163	0.163
24:30:00	0.000	0.000	0.000	0.000	0.159	0.159
25:00:00	0.000	0.000	0.000	0.000	0.156	0.156
25:30:00	0.000	0.000	0.000	0.000	0.153	0.153
26:00:00	0.000	0.000	0.000	0.000	0.150	0.150
26:30:00	0.000	0.000	0.000	0.000	0.146	0.146
27:00:00	0.000	0.000	0.000	0.000	0.143	0.143
27:30:00	0.000	0.000	0.000	0.000	0.140	0.140
28:00:00	0.000	0.000	0.000	0.000	0.137	0.137
28:30:00	0.000	0.000	0.000	0.000	0.135	0.135
29:00:00	0.000	0.000	0.000	0.000	0.132	0.132
29:30:00	0.000	0.000	0.000	0.000	0.129	0.129
30:00:00	0.000	0.000	0.000	0.000	0.126	0.126
30:30:00	0.000	0.000	0.000	0.000	0.124	0.124
31:00:00	0.000	0.000	0.000	0.000	0.121	0.121
31:30:00	0.000	0.000	0.000	0.000	0.119	0.119
32:00:00	0.000	0.000	0.000	0.000	0.116	0.116
32:30:00	0.000	0.000	0.000	0.000	0.114	0.114
33:00:00	0.000	0.000	0.000	0.000	0.111	0.111
33:30:00	0.000	0.000	0.000	0.000	0.109	0.109
34:00:00	0.000	0.000	0.000	0.000	0.107	0.107
34:30:00	0.000	0.000	0.000	0.000	0.105	0.105
35:00:00	0.000	0.000	0.000	0.000	0.102	0.102

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m^3/s)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
35:30:00	0.000	0.000	0.000	0.000	0.100	0.100
36:00:00	0.000	0.000	0.000	0.000	0.098	0.098
36:30:00	0.000	0.000	0.000	0.000	0.096	0.096

Appendix

Catchment descriptors *

Name	Value	User-defined value used?
Area (km²)	1.67 [1.93]	Yes
ALTBAR	24	No
ASPBAR	225	No
ASPVAR	0.36	No
BFIHOST	0.31	No
BFIHOST19	0.28	No
DPLBAR (km)	1.23 [1.33]	Yes
DPSBAR (mkm-¹)	30.2	No
FARL	1	No
LDP	2.55	No
PROPWET	0.36	No
RMED1H	11.6	No
RMED1D	37.9	No
RMED2D	47.6	No
SAAR (mm)	794	No
SAAR4170 (mm)	803	No
SPRHOST	48.33	No
Urbext2000	0	No
Urbext1990	0	No
URBCONC	0	No
URBLOC	0	No
DDF parameter C	-0.03	No
DDF parameter D1	0.39	No
DDF parameter D2	0.28	No
DDF parameter D3	0.36	No
DDF parameter E	0.32	No
DDF parameter F	2.47	No
DDF parameter C (1km grid value)	-0.03	No
DDF parameter D1 (1km grid value)	0.4	No
DDF parameter D2 (1km grid value)	0.28	No
DDF parameter D3 (1km grid value)	0.37	No
DDF parameter E (1km grid value)	0.32	No
DDF parameter F (1km grid value)	2.47	No

Values in square brackets are the original values loaded from the FEH Web Service or FEH CD-ROM

Diagrams including Cross Sections

N

0 50 100m 150m

Scale 1:1500 @ A1

Key

- Proposed DCO Order Limits
- Max. substation footprint (indicative layout)

Indicative SuDS Plan

- Retained woodland/vegetation (indicative)
- Existing parkland/standard trees
- New parkland trees
- Wet woodland planting
- Native scrub planting
- Native woodland planting
- Maintenance strip: mown grass
- Attenuation basin (planted with wet woodland) - extent
- Attenuation basin - Indicative 3m maintenance distance
- Filter drains
- Swale
- Onshore cable route (indicative)
- Indicative basin cross section alignments (see drawing no. 42285-WSPE-CO-ON-FG-MD-0100)

Rampion Extension Development Limited

Rampion 2 WIND FARM

Rampion 2 Offshore Wind Farm
Oakendene Flood Risk and Drainage Applicant Responses

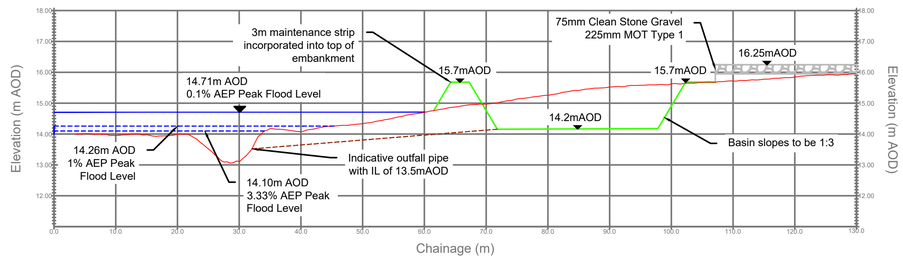
Cross Section Alignments

System Identifier:	Version:
42285-WSPE-CO-ON-FG-MD-0101	4.0

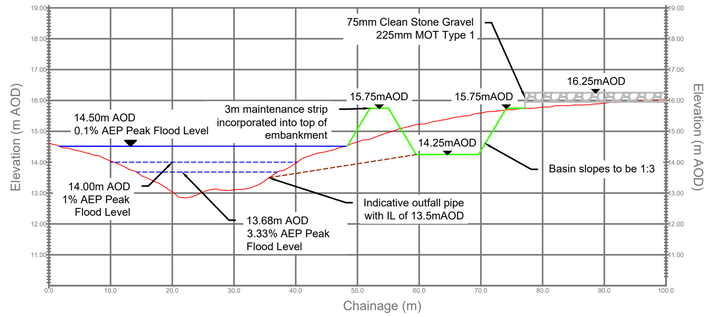
Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WSP	[redacted]	[redacted]	24/04/24	FINAL

N

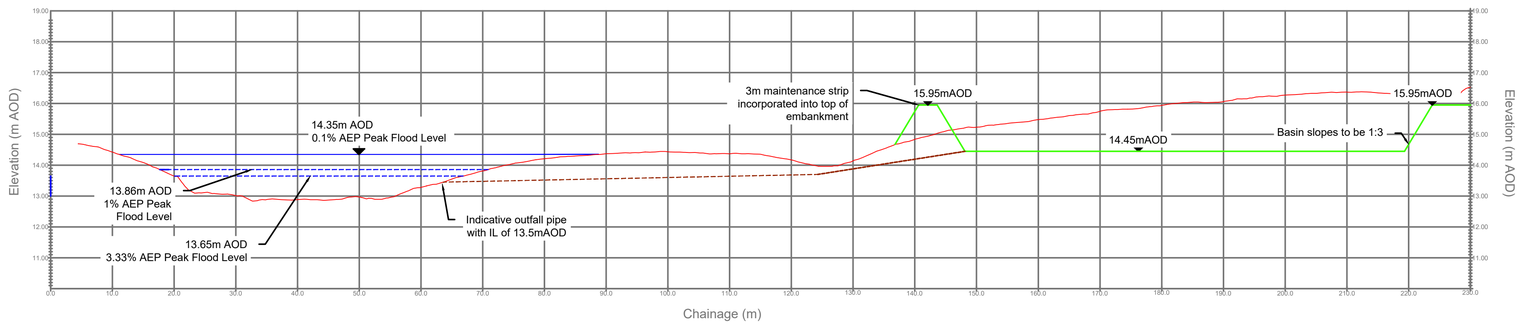
Indicative Profile View of Basin P2



Indiciative Profile View of Basin P3



Indicative Profile View of Basin P4



Key

- Existing ground
- Proposed ground
- Indicative peak flood water level (0.1% AEP from Environment Agency RoFSW extent)
- Indicative peak flood water level (1% and 3.33 AEP from Environment Agency RoFSW extent)
- Indicative outfall from basins to watercourse

Notes:
Indicative peak flood levels have been determined from the Environment Agency Risk of flooding from Surface Water (RoFSW) 0.1% AEP extent, agreed with stakeholders as a suitable proxy for the 1% AEP plus climate change extent/peak water level.

Attenuation basin planted with wet woodland: maximum slope 1:3.

Horizontal: 1.000 Vertical: 5.000.

Cross section alignments are presented in the Indicative Cross Section Alignments - Indicative SuDS Plan (drawing no. 42285-WSPE-CO-ON-FG-MD-0101

Rampion Extension Development Limited

Rampion 2 WIND FARM

Rampion 2 Offshore Wind Farm
Oakendene Flood Risk and Drainage
Applicant Responses

Indicative Basin Cross Sections

System Identifier:	Version:
42285-WSPE-CO-ON-FG-MD-0100	4.0

Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WSP	[redacted]	[redacted]	24/04/24	FINAL

Calculations – Causeway Flow

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
Gravel 1	2.747	5.00	16.250		523062.533	122299.681	1.350
Eastern Basin			15.700		523103.485	122177.042	1.500
Eastern OF			14.000	1200	523073.916	122119.852	0.500

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	Gravel 1	Eastern Basin	129.296	0.600	14.900	14.200	0.700	184.7	300	6.87	44.8
1.001	Eastern Basin	Eastern OF	64.382	0.600	14.200	13.500	0.700	92.0	300	7.52	42.9

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.153	81.5	333.6	1.050	1.200	2.747	0.0	300	1.168
1.001	1.640	115.9	319.6	1.200	0.200	2.747	0.0	300	1.661

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	129.296	184.7	300	Circular	16.250	14.900	1.050	15.700	14.200	1.200
1.001	64.382	92.0	300	Circular	15.700	14.200	1.200	14.000	13.500	0.200

Link	US Node	Node Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	Gravel 1	Junction	Eastern Basin		Junction	
1.001	Eastern Basin	Junction	Eastern OF	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
Gravel 1	523062.533	122299.681	16.250	1.350			0	1.000	14.900	300
Eastern Basin	523103.485	122177.042	15.700	1.500			1 0	1.000 1.001	14.200 14.200	300 300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
Eastern OF	523073.916	122119.852	14.000	0.500	1200	1 1	1.001	13.500	300

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	1440	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	0	0	0
100	45	0	0

Node Eastern OF Surcharged Outfall

Overrides Design Area	x	Depression Storage Area (m²)	0	Evapo-transpiration (mm/day)	0
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	0		

Applies to All storms

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.000	150	0.000	300	1.210	450	0.455	600	0.000
30	0.000	180	0.276	330	1.143	480	0.319	630	0.000
60	0.000	210	0.600	360	0.993	510	0.197	660	0.000
90	0.000	240	0.909	390	0.806	540	0.084	690	0.000
120	0.000	270	1.138	420	0.617	570	0.000	720	0.000

Node Eastern Basin Online Hydro-Brake® Control

Flap Valve	✓	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	14.200	Product Number	CTL-SHE-0217-2450-1000-2450
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.300
Design Flow (l/s)	24.5	Min Node Diameter (mm)	1500

Node Gravel 1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	14.900	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	62	Depth (m)	0.100
Safety Factor	2.0	Width (m)	128.920	Inf Depth (m)	
Porosity	0.30	Length (m)	128.920		

Node Eastern Basin Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	14.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	510

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	1850.9	0.0	1.500	2820.9	0.0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	104.993	29.709	30 year 720 minute winter	13.357	5.327
2 year 15 minute winter	73.679	29.709	30 year 960 minute summer	16.091	4.237
2 year 30 minute summer	68.753	19.455	30 year 960 minute winter	10.659	4.237
2 year 30 minute winter	48.248	19.455	30 year 1440 minute summer	11.482	3.077
2 year 60 minute summer	46.647	12.327	30 year 1440 minute winter	7.716	3.077
2 year 60 minute winter	30.991	12.327	100 year 15 minute summer	352.748	99.816
2 year 120 minute summer	33.379	8.821	100 year 15 minute winter	247.543	99.816
2 year 120 minute winter	22.176	8.821	100 year 30 minute summer	236.350	66.879
2 year 180 minute summer	27.296	7.024	100 year 30 minute winter	165.860	66.879
2 year 180 minute winter	17.743	7.024	100 year 60 minute summer	162.423	42.924
2 year 240 minute summer	22.326	5.900	100 year 60 minute winter	107.910	42.924
2 year 240 minute winter	14.833	5.900	100 year 120 minute summer	97.895	25.871
2 year 360 minute summer	17.608	4.531	100 year 120 minute winter	65.039	25.871
2 year 360 minute winter	11.445	4.531	100 year 180 minute summer	74.632	19.205
2 year 480 minute summer	14.043	3.711	100 year 180 minute winter	48.513	19.205
2 year 480 minute winter	9.330	3.711	100 year 240 minute summer	58.695	15.511
2 year 600 minute summer	11.566	3.164	100 year 240 minute winter	38.996	15.511
2 year 600 minute winter	7.903	3.164	100 year 360 minute summer	44.358	11.415
2 year 720 minute summer	10.335	2.770	100 year 360 minute winter	28.834	11.415
2 year 720 minute winter	6.946	2.770	100 year 480 minute summer	34.652	9.158
2 year 960 minute summer	8.500	2.238	100 year 480 minute winter	23.022	9.158
2 year 960 minute winter	5.630	2.238	100 year 600 minute summer	28.188	7.710
2 year 1440 minute summer	6.193	1.660	100 year 600 minute winter	19.260	7.710
2 year 1440 minute winter	4.162	1.660	100 year 720 minute summer	24.980	6.695
30 year 15 minute summer	278.292	78.747	100 year 720 minute winter	16.788	6.695
30 year 15 minute winter	195.292	78.747	100 year 960 minute summer	20.331	5.354
30 year 30 minute summer	185.198	52.405	100 year 960 minute winter	13.467	5.354
30 year 30 minute winter	129.963	52.405	100 year 1440 minute summer	14.589	3.910
30 year 60 minute summer	125.793	33.243	100 year 1440 minute winter	9.805	3.910
30 year 60 minute winter	83.574	33.243	100 year +45% CC 15 minute summer	511.485	144.733
30 year 120 minute summer	77.472	20.473	100 year +45% CC 15 minute winter	358.937	144.733
30 year 120 minute winter	51.470	20.473	100 year +45% CC 30 minute summer	342.707	96.974
30 year 180 minute summer	59.511	15.314	100 year +45% CC 30 minute winter	240.496	96.974
30 year 180 minute winter	38.684	15.314	100 year +45% CC 60 minute summer	235.513	62.239
30 year 240 minute summer	46.948	12.407	100 year +45% CC 60 minute winter	156.469	62.239
30 year 240 minute winter	31.191	12.407	100 year +45% CC 120 minute summer	141.947	37.512
30 year 360 minute summer	35.524	9.142	100 year +45% CC 120 minute winter	94.306	37.512
30 year 360 minute winter	23.092	9.142	100 year +45% CC 180 minute summer	108.216	27.848
30 year 480 minute summer	27.706	7.322	100 year +45% CC 180 minute winter	70.343	27.848
30 year 480 minute winter	18.407	7.322	100 year +45% CC 240 minute summer	85.108	22.491
30 year 600 minute summer	22.484	6.150	100 year +45% CC 240 minute winter	56.543	22.491
30 year 600 minute winter	15.362	6.150	100 year +45% CC 360 minute summer	64.319	16.552
30 year 720 minute summer	19.874	5.327	100 year +45% CC 360 minute winter	41.809	16.552

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC 480 minute summer	50.246	13.278	100 year +45% CC 720 minute winter	24.343	9.708
100 year +45% CC 480 minute winter	33.382	13.278	100 year +45% CC 960 minute summer	29.479	7.763
100 year +45% CC 600 minute summer	40.873	11.180	100 year +45% CC 960 minute winter	19.528	7.763
100 year +45% CC 600 minute winter	27.927	11.180	100 year +45% CC 1440 minute summer	21.154	5.669
100 year +45% CC 720 minute summer	36.221	9.708	100 year +45% CC 1440 minute winter	14.217	5.669

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	Gravel 1	84	15.129	0.229	140.9	205.8474	0.0000	OK
360 minute winter	Eastern Basin	376	14.491	0.291	59.8	565.8118	0.0000	OK
15 minute summer	Eastern OF	300	14.710	1.210	3.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	Gravel 1	1.000	Eastern Basin	67.0	2.048	0.822	4.8568	
360 minute winter	Eastern Basin	Hydro-Brake®	Eastern OF	24.2				575.3

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	Gravel 1	92	15.319	0.419	326.9	577.8427	0.0000	SURCHARGED
480 minute winter	Eastern Basin	472	14.734	0.534	89.0	1080.1640	0.0000	SURCHARGED
15 minute summer	Eastern OF	300	14.710	1.210	16.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	Gravel 1	1.000	Eastern Basin	92.3	2.099	1.132	8.8064	
480 minute winter	Eastern Basin	Hydro-Brake®	Eastern OF	24.5				1282.9

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	Gravel 1	96	15.419	0.519	413.1	775.4498	0.0000	SURCHARGED
600 minute winter	Eastern Basin	600	14.855	0.655	86.4	1350.4890	0.0000	SURCHARGED
240 minute winter	Eastern OF	300	14.710	1.210	24.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	Gravel 1	1.000	Eastern Basin	98.5	2.104	1.209	9.1049	
600 minute winter	Eastern Basin	Hydro-Brake®	Eastern OF	24.5				1691.7

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	Gravel 1	108	15.645	0.745	599.0	1222.4630	0.0000	SURCHARGED
960 minute winter	Eastern Basin	990	15.060	0.860	82.8	1831.8750	0.0000	SURCHARGED
240 minute summer	Eastern OF	300	14.710	1.210	24.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	Gravel 1	1.000	Eastern Basin	111.0	2.119	1.362	9.1049	
960 minute winter	Eastern Basin	Hydro-Brake®	Eastern OF	24.5				2673.7

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
Central Basin			15.750		522968.519	122199.040	1.500
Central OF			14.000	1200	522844.745	122213.170	0.500
Gravel 1	1.716	5.00	16.250		522952.385	122278.804	0.750

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	Gravel 1	Central Basin	81.379	0.600	15.500	14.250	1.250	65.1	450	5.54	49.5
1.001	Central Basin	Central OF	124.578	0.600	14.250	13.500	0.750	166.1	225	7.59	42.7

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.522	401.2	230.1	0.300	1.050	1.716	0.0	245	2.605
1.001	1.011	40.2	198.8	1.275	0.275	1.716	0.0	225	1.030

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	81.379	65.1	450	Circular	16.250	15.500	0.300	15.750	14.250	1.050
1.001	124.578	166.1	225	Circular	15.750	14.250	1.275	14.000	13.500	0.275

Link	US Node	Node Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	Gravel 1	Junction	Central Basin		Junction	
1.001	Central Basin	Junction	Central OF	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
Central Basin	522968.519	122199.040	15.750	1.500		 1	1.000	14.250	450
						0	1.001	14.250	225
Central OF	522844.745	122213.170	14.000	0.500	1200	1 	1.001	13.500	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
Gravel 1	522952.385	122278.804	16.250	0.750					
						0	1.000	15.500	450

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	1440	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	0	0	0
100	45	0	0

Node Central OF Surcharged Outfall

Overrides Design Area	x	Depression Storage Area (m²)	0	Evapo-transpiration (mm/day)	0
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	0		

Applies to All storms

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.000	150	0.000	300	1.020	450	0.331	600	0.000
30	0.000	180	0.167	330	0.959	480	0.206	630	0.000
60	0.000	210	0.463	360	0.822	510	0.095	660	0.000
90	0.000	240	0.745	390	0.651	540	0.000	690	0.000
120	0.000	270	0.954	420	0.478	570	0.000	720	0.000

Node Central Basin Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	14.250	Product Number	CTL-SHE-0176-1530-1073-1530
Design Depth (m)	1.073	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	15.3	Min Node Diameter (mm)	1500

Node Central Basin Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	14.250
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	630

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	726.7	0.0	1.500	1879.7	0.0

Node Gravel 1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	15.500	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	11	Depth (m)	0.100
Safety Factor	2.0	Width (m)	101.490	Inf Depth (m)	
Porosity	0.30	Length (m)	101.490		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	104.993	29.709	30 year 960 minute winter	10.659	4.237
2 year 15 minute winter	73.679	29.709	30 year 1440 minute summer	11.482	3.077
2 year 30 minute summer	68.753	19.455	30 year 1440 minute winter	7.716	3.077
2 year 30 minute winter	48.248	19.455	100 year 15 minute summer	352.748	99.816
2 year 60 minute summer	46.647	12.327	100 year 15 minute winter	247.543	99.816
2 year 60 minute winter	30.991	12.327	100 year 30 minute summer	236.350	66.879
2 year 120 minute summer	33.379	8.821	100 year 30 minute winter	165.860	66.879
2 year 120 minute winter	22.176	8.821	100 year 60 minute summer	162.423	42.924
2 year 180 minute summer	27.296	7.024	100 year 60 minute winter	107.910	42.924
2 year 180 minute winter	17.743	7.024	100 year 120 minute summer	97.895	25.871
2 year 240 minute summer	22.326	5.900	100 year 120 minute winter	65.039	25.871
2 year 240 minute winter	14.833	5.900	100 year 180 minute summer	74.632	19.205
2 year 360 minute summer	17.608	4.531	100 year 180 minute winter	48.513	19.205
2 year 360 minute winter	11.445	4.531	100 year 240 minute summer	58.695	15.511
2 year 480 minute summer	14.043	3.711	100 year 240 minute winter	38.996	15.511
2 year 480 minute winter	9.330	3.711	100 year 360 minute summer	44.358	11.415
2 year 600 minute summer	11.566	3.164	100 year 360 minute winter	28.834	11.415
2 year 600 minute winter	7.903	3.164	100 year 480 minute summer	34.652	9.158
2 year 720 minute summer	10.335	2.770	100 year 480 minute winter	23.022	9.158
2 year 720 minute winter	6.946	2.770	100 year 600 minute summer	28.188	7.710
2 year 960 minute summer	8.500	2.238	100 year 600 minute winter	19.260	7.710
2 year 960 minute winter	5.630	2.238	100 year 720 minute summer	24.980	6.695
2 year 1440 minute summer	6.193	1.660	100 year 720 minute winter	16.788	6.695
2 year 1440 minute winter	4.162	1.660	100 year 960 minute summer	20.331	5.354
30 year 15 minute summer	278.292	78.747	100 year 960 minute winter	13.467	5.354
30 year 15 minute winter	195.292	78.747	100 year 1440 minute summer	14.589	3.910
30 year 30 minute summer	185.198	52.405	100 year 1440 minute winter	9.805	3.910
30 year 30 minute winter	129.963	52.405	100 year +45% CC 15 minute summer	511.485	144.733
30 year 60 minute summer	125.793	33.243	100 year +45% CC 15 minute winter	358.937	144.733
30 year 60 minute winter	83.574	33.243	100 year +45% CC 30 minute summer	342.707	96.974
30 year 120 minute summer	77.472	20.473	100 year +45% CC 30 minute winter	240.496	96.974
30 year 120 minute winter	51.470	20.473	100 year +45% CC 60 minute summer	235.513	62.239
30 year 180 minute summer	59.511	15.314	100 year +45% CC 60 minute winter	156.469	62.239
30 year 180 minute winter	38.684	15.314	100 year +45% CC 120 minute summer	141.947	37.512
30 year 240 minute summer	46.948	12.407	100 year +45% CC 120 minute winter	94.306	37.512
30 year 240 minute winter	31.191	12.407	100 year +45% CC 180 minute summer	108.216	27.848
30 year 360 minute summer	35.524	9.142	100 year +45% CC 180 minute winter	70.343	27.848
30 year 360 minute winter	23.092	9.142	100 year +45% CC 240 minute summer	85.108	22.491
30 year 480 minute summer	27.706	7.322	100 year +45% CC 240 minute winter	56.543	22.491
30 year 480 minute winter	18.407	7.322	100 year +45% CC 360 minute summer	64.319	16.552
30 year 600 minute summer	22.484	6.150	100 year +45% CC 360 minute winter	41.809	16.552
30 year 600 minute winter	15.362	6.150	100 year +45% CC 480 minute summer	50.246	13.278
30 year 720 minute summer	19.874	5.327	100 year +45% CC 480 minute winter	33.382	13.278
30 year 720 minute winter	13.357	5.327	100 year +45% CC 600 minute summer	40.873	11.180
30 year 960 minute summer	16.091	4.237	100 year +45% CC 600 minute winter	27.927	11.180

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC 720 minute summer	36.221	9.708	100 year +45% CC 960 minute winter	19.528	7.763
100 year +45% CC 720 minute winter	24.343	9.708	100 year +45% CC 1440 minute summer	21.154	5.669
100 year +45% CC 960 minute summer	29.479	7.763	100 year +45% CC 1440 minute winter	14.217	5.669

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	Central Basin	352	14.580	0.330	36.2	281.6325	0.0000	SURCHARGED
15 minute summer	Central OF	300	14.520	1.020	6.1	0.0000	0.0000	OK
30 minute winter	Gravel 1	24	15.645	0.145	179.2	85.3241	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	Central Basin	Hydro-Brake®	Central OF	15.3				419.3
30 minute winter	Gravel 1	1.000	Central Basin	72.6	3.060	0.181	2.4243	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	Central Basin	480	14.847	0.597	60.1	570.6165	0.0000	SURCHARGED
15 minute summer	Central OF	300	14.520	1.020	15.0	0.0000	0.0000	OK
30 minute winter	Gravel 1	24	15.742	0.242	482.7	224.4649	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	Central Basin	Hydro-Brake®	Central OF	15.3				872.6
30 minute winter	Gravel 1	1.000	Central Basin	206.0	3.646	0.513	6.6138	

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	Central Basin	600	15.006	0.756	66.0	769.6912	0.0000	SURCHARGED
15 minute summer	Central OF	300	14.520	1.020	15.3	0.0000	0.0000	OK
30 minute winter	Gravel 1	24	15.780	0.280	616.1	284.5067	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	Central Basin	Hydro-Brake®	Central OF	15.3				1140.2
30 minute winter	Gravel 1	1.000	Central Basin	266.4	3.781	0.664	8.1457	

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	Central Basin	690	15.304	1.054	95.6	1193.5280	0.0000	SURCHARGED
15 minute summer	Central OF	300	14.520	1.020	15.3	0.0000	0.0000	OK
30 minute winter	Gravel 1	24	15.860	0.360	893.3	409.7461	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	Central Basin	Hydro-Brake®	Central OF	15.3				1624.3
30 minute winter	Gravel 1	1.000	Central Basin	383.4	3.958	0.956	10.6708	

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	5	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
WB_SW1			16.250	450	522931.349	122490.636	0.416
WB_SW2			16.250	450	522931.349	122360.878	1.138
WB_SW3	0.000		16.250	450	522882.149	122360.878	1.730
Western Basin			15.950		522873.228	122346.030	1.500
Western OF			14.000	1200	522829.701	122225.278	0.500
Gravel 3	0.209	5.00	16.250		522952.235	122347.676	0.300
Gravel 2	0.543	5.00	16.250		522977.494	122388.939	0.300
Gravel 1	0.539	5.00	16.250		522977.526	122455.143	0.300

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	WB_SW1	WB_SW2	129.758	0.600	15.834	15.112	0.722	179.7	300	8.24	50.0
1.001	WB_SW2	WB_SW3	49.200	0.600	15.112	14.595	0.517	95.2	300	8.75	50.0
1.002	WB_SW3	Western Basin	17.322	0.600	14.520	14.450	0.070	247.5	300	9.04	50.0
1.004	Western Basin	Western OF	128.357	0.600	14.450	13.500	0.950	135.1	225	10.95	50.0
1.000a	Gravel 1	WB_SW1	58.241	0.600	15.950	15.834	0.116	500.0	300	6.39	50.0
2.000	Gravel 2	WB_SW2	54.007	0.600	15.950	15.112	0.838	64.4	225	5.55	50.0
3.000	Gravel 3	WB_SW3	71.319	0.600	15.950	14.520	1.430	49.9	300	5.53	50.0

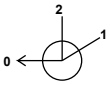
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.169	82.7	73.0	0.116	0.838	0.539	0.0	220	1.314
1.001	1.612	113.9	146.6	0.838	1.355	1.082	0.0	300	1.632
1.002	0.995	70.3	175.0	1.430	1.200	1.291	0.0	300	1.008
1.004	1.123	44.6	175.0	1.275	0.275	1.291	0.0	225	1.144
1.000a	0.696	49.2	73.0	0.000	0.116	0.539	0.0	300	0.705
2.000	1.631	64.9	73.6	0.075	0.913	0.543	0.0	225	1.661
3.000	2.231	157.7	28.3	0.000	1.430	0.209	0.0	86	1.705

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	129.758	179.7	300	Circular	16.250	15.834	0.116	16.250	15.112	0.838
1.001	49.200	95.2	300	Circular	16.250	15.112	0.838	16.250	14.595	1.355
1.002	17.322	247.5	300	Circular	16.250	14.520	1.430	15.950	14.450	1.200
1.004	128.357	135.1	225	Circular	15.950	14.450	1.275	14.000	13.500	0.275
1.000a	58.241	500.0	300	Circular	16.250	15.950	0.000	16.250	15.834	0.116
2.000	54.007	64.4	225	Circular	16.250	15.950	0.075	16.250	15.112	0.913
3.000	71.319	49.9	300	Circular	16.250	15.950	0.000	16.250	14.520	1.430

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	WB_SW1	450	Manhole	Adoptable	WB_SW2	450	Manhole	Adoptable
1.001	WB_SW2	450	Manhole	Adoptable	WB_SW3	450	Manhole	Adoptable
1.002	WB_SW3	450	Manhole	Adoptable	Western Basin		Junction	
1.004	Western Basin		Junction		Western OF	1200	Manhole	Adoptable
1.000a	Gravel 1		Junction		WB_SW1	450	Manhole	Adoptable
2.000	Gravel 2		Junction		WB_SW2	450	Manhole	Adoptable
3.000	Gravel 3		Junction		WB_SW3	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
WB_SW1	522931.349	122490.636	16.250	0.416	450	1	1.000a	15.834	300
									
						0	1.000	15.834	300
WB_SW2	522931.349	122360.878	16.250	1.138	450	1	2.000	15.112	225
									
						2	1.000	15.112	300
						0	1.001	15.112	300
WB_SW3	522882.149	122360.878	16.250	1.730	450	1	3.000	14.520	300
									
						2	1.001	14.595	300
						0	1.002	14.520	300
Western Basin	522873.228	122346.030	15.950	1.500		1	1.002	14.450	300
									
						0	1.004	14.450	225
Western OF	522829.701	122225.278	14.000	0.500	1200	1	1.004	13.500	225
									
Gravel 3	522952.235	122347.676	16.250	0.300					
						0	3.000	15.950	300
Gravel 2	522977.494	122388.939	16.250	0.300					
						0	2.000	15.950	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
Gravel 1	522977.526	122455.143	16.250	0.300		0	1.000a	15.950	300

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	1440	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	0	0	0
100	45	0	0

Node Western OF Surcharged Outfall

Overrides Design Area	x	Depression Storage Area (m²)	0	Evapo-transpiration (mm/day)	0
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	0		

Applies to All storms

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.000	150	0.000	300	0.850	450	0.170	600	0.000
30	0.000	180	0.009	330	0.790	480	0.048	630	0.000
60	0.000	210	0.300	360	0.655	510	0.000	660	0.000
90	0.000	240	0.579	390	0.486	540	0.000	690	0.000
120	0.000	270	0.785	420	0.316	570	0.000	720	0.000

Node Western Basin Online Hydro-Brake® Control

Flap Valve	✓	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	14.450	Product Number	CTL-SHE-0154-1150-1100-1150
Design Depth (m)	1.100	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	11.5	Min Node Diameter (mm)	1200

Node Western Basin Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	14.450
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	525

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	629.6	0.0	1.500	1536.0	0.0

Node WB_SW2 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	1.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	15.112	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	40	Diameter (mm)	1000

Node WB_SW3 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	1.001
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	14.595	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	810	Diameter (mm)	1000

Node Western Basin Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	1.002
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	14.450	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	1245	Diameter (mm)	1000

Node Gravel 3 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	15.950	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.100
Safety Factor	2.0	Width (m)	45.720	Inf Depth (m)	
Porosity	0.30	Length (m)	45.720		

Node Gravel 2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	15.950	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.100
Safety Factor	2.0	Width (m)	57.360	Inf Depth (m)	
Porosity	0.30	Length (m)	57.360		

Node Gravel 1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	15.950	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.100
Safety Factor	2.0	Width (m)	57.100	Inf Depth (m)	
Porosity	0.30	Length (m)	57.100		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	104.993	29.709	2 year 360 minute winter	11.445	4.531
2 year 15 minute winter	73.679	29.709	2 year 480 minute summer	14.043	3.711
2 year 30 minute summer	68.753	19.455	2 year 480 minute winter	9.330	3.711
2 year 30 minute winter	48.248	19.455	2 year 600 minute summer	11.566	3.164
2 year 60 minute summer	46.647	12.327	2 year 600 minute winter	7.903	3.164
2 year 60 minute winter	30.991	12.327	2 year 720 minute summer	10.335	2.770
2 year 120 minute summer	33.379	8.821	2 year 720 minute winter	6.946	2.770
2 year 120 minute winter	22.176	8.821	2 year 960 minute summer	8.500	2.238
2 year 180 minute summer	27.296	7.024	2 year 960 minute winter	5.630	2.238
2 year 180 minute winter	17.743	7.024	2 year 1440 minute summer	6.193	1.660
2 year 240 minute summer	22.326	5.900	2 year 1440 minute winter	4.162	1.660
2 year 240 minute winter	14.833	5.900	30 year 15 minute summer	278.292	78.747
2 year 360 minute summer	17.608	4.531	30 year 15 minute winter	195.292	78.747

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year 30 minute summer	185.198	52.405
30 year 30 minute winter	129.963	52.405
30 year 60 minute summer	125.793	33.243
30 year 60 minute winter	83.574	33.243
30 year 120 minute summer	77.472	20.473
30 year 120 minute winter	51.470	20.473
30 year 180 minute summer	59.511	15.314
30 year 180 minute winter	38.684	15.314
30 year 240 minute summer	46.948	12.407
30 year 240 minute winter	31.191	12.407
30 year 360 minute summer	35.524	9.142
30 year 360 minute winter	23.092	9.142
30 year 480 minute summer	27.706	7.322
30 year 480 minute winter	18.407	7.322
30 year 600 minute summer	22.484	6.150
30 year 600 minute winter	15.362	6.150
30 year 720 minute summer	19.874	5.327
30 year 720 minute winter	13.357	5.327
30 year 960 minute summer	16.091	4.237
30 year 960 minute winter	10.659	4.237
30 year 1440 minute summer	11.482	3.077
30 year 1440 minute winter	7.716	3.077
100 year 15 minute summer	352.748	99.816
100 year 15 minute winter	247.543	99.816
100 year 30 minute summer	236.350	66.879
100 year 30 minute winter	165.860	66.879
100 year 60 minute summer	162.423	42.924
100 year 60 minute winter	107.910	42.924
100 year 120 minute summer	97.895	25.871
100 year 120 minute winter	65.039	25.871
100 year 180 minute summer	74.632	19.205
100 year 180 minute winter	48.513	19.205
100 year 240 minute summer	58.695	15.511
100 year 240 minute winter	38.996	15.511
100 year 360 minute summer	44.358	11.415
100 year 360 minute winter	28.834	11.415
100 year 480 minute summer	34.652	9.158
100 year 480 minute winter	23.022	9.158
100 year 600 minute summer	28.188	7.710
100 year 600 minute winter	19.260	7.710
100 year 720 minute summer	24.980	6.695
100 year 720 minute winter	16.788	6.695
100 year 960 minute summer	20.331	5.354
100 year 960 minute winter	13.467	5.354
100 year 1440 minute summer	14.589	3.910
100 year 1440 minute winter	9.805	3.910
100 year +45% CC 15 minute summer	511.485	144.733
100 year +45% CC 15 minute winter	358.937	144.733
100 year +45% CC 30 minute summer	342.707	96.974
100 year +45% CC 30 minute winter	240.496	96.974
100 year +45% CC 60 minute summer	235.513	62.239
100 year +45% CC 60 minute winter	156.469	62.239
100 year +45% CC 120 minute summer	141.947	37.512
100 year +45% CC 120 minute winter	94.306	37.512
100 year +45% CC 180 minute summer	108.216	27.848
100 year +45% CC 180 minute winter	70.343	27.848
100 year +45% CC 240 minute summer	85.108	22.491
100 year +45% CC 240 minute winter	56.543	22.491
100 year +45% CC 360 minute summer	64.319	16.552
100 year +45% CC 360 minute winter	41.809	16.552
100 year +45% CC 480 minute summer	50.246	13.278
100 year +45% CC 480 minute winter	33.382	13.278
100 year +45% CC 600 minute summer	40.873	11.180
100 year +45% CC 600 minute winter	27.927	11.180
100 year +45% CC 720 minute summer	36.221	9.708
100 year +45% CC 720 minute winter	24.343	9.708
100 year +45% CC 960 minute summer	29.479	7.763
100 year +45% CC 960 minute winter	19.528	7.763
100 year +45% CC 1440 minute summer	21.154	5.669
100 year +45% CC 1440 minute winter	14.217	5.669

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.78%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	WB_SW1	124	15.910	0.076	12.0	0.0121	0.0000	OK
120 minute winter	WB_SW2	82	15.219	0.107	30.3	0.2626	0.0000	OK
120 minute winter	WB_SW3	78	14.675	0.155	38.2	0.0991	0.0000	OK
360 minute winter	Western Basin	304	14.670	0.220	28.0	154.1609	0.0000	OK
30 minute winter	Western OF	300	14.350	0.850	5.8	0.0000	0.0000	OK
30 minute winter	Gravel 3	23	16.000	0.050	21.8	9.3443	0.0000	OK
30 minute winter	Gravel 2	25	16.033	0.083	56.7	28.6090	0.0000	OK
180 minute winter	Gravel 1	120	16.054	0.104	22.0	44.3301	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	WB_SW1	1.000	WB_SW2	12.0	0.695	0.145	2.3230	
120 minute winter	WB_SW2	1.001	WB_SW3	30.3	1.361	0.266	1.0943	
120 minute winter	WB_SW3	1.002	Western Basin	39.0	1.673	0.554	0.5640	
360 minute winter	Western Basin	Hydro-Brake®	Western OF	11.2				287.2
30 minute winter	Gravel 3	3.000	WB_SW3	9.7	0.547	0.062	1.5301	
30 minute winter	Gravel 2	2.000	WB_SW2	18.9	1.310	0.292	0.8245	
180 minute winter	Gravel 1	1.000a	WB_SW1	12.0	0.673	0.244	1.0417	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.78%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	WB_SW1	48	15.956	0.122	29.4	0.0194	0.0000	OK
60 minute winter	WB_SW2	46	15.298	0.186	76.3	0.7326	0.0000	OK
360 minute winter	WB_SW3	360	14.955	0.435	56.9	1.5553	0.0000	SURCHARGED
360 minute winter	Western Basin	368	14.953	0.503	55.8	394.7541	0.0000	SURCHARGED
120 minute summer	Western OF	300	14.350	0.850	11.5	0.0000	0.0000	OK
30 minute winter	Gravel 3	23	16.033	0.083	58.8	24.7122	0.0000	OK
60 minute winter	Gravel 2	43	16.092	0.142	103.3	77.9729	0.0000	OK
60 minute winter	Gravel 1	47	16.119	0.169	102.6	101.4173	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	WB_SW1	1.000	WB_SW2	29.3	0.847	0.355	4.7160	
60 minute winter	WB_SW2	1.001	WB_SW3	76.2	1.687	0.669	2.2464	
360 minute winter	WB_SW3	1.002	Western Basin	55.8	1.288	0.793	1.2198	
360 minute winter	Western Basin	Hydro-Brake®	Western OF	11.5				584.6
30 minute winter	Gravel 3	3.000	WB_SW3	26.7	0.698	0.169	2.7443	
60 minute winter	Gravel 2	2.000	WB_SW2	47.7	1.563	0.736	1.6590	
60 minute winter	Gravel 1	1.000a	WB_SW1	29.4	0.870	0.597	1.9680	

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.78%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	WB_SW1	48	15.977	0.143	38.8	0.0227	0.0000	OK
60 minute winter	WB_SW2	42	15.327	0.215	98.0	0.9659	0.0000	OK
480 minute winter	WB_SW3	472	15.096	0.576	60.3	3.1722	0.0000	SURCHARGED
480 minute winter	Western Basin	480	15.094	0.644	59.4	533.7792	0.0000	SURCHARGED
180 minute winter	Western OF	300	14.350	0.850	11.5	0.0000	0.0000	OK
30 minute winter	Gravel 3	23	16.044	0.094	75.1	31.5168	0.0000	OK
60 minute winter	Gravel 2	43	16.119	0.169	133.4	101.7777	0.0000	OK
60 minute winter	Gravel 1	47	16.151	0.201	132.5	129.9559	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	WB_SW1	1.000	WB_SW2	38.8	0.920	0.469	5.6085	
60 minute winter	WB_SW2	1.001	WB_SW3	98.5	1.684	0.864	3.0604	
480 minute winter	WB_SW3	1.002	Western Basin	59.4	1.273	0.844	1.2198	
480 minute winter	Western Basin	Hydro-Brake®	Western OF	11.5				781.4
30 minute winter	Gravel 3	3.000	WB_SW3	34.1	0.783	0.216	3.1779	
60 minute winter	Gravel 2	2.000	WB_SW2	60.0	1.667	0.925	1.9173	
60 minute winter	Gravel 1	1.000a	WB_SW1	38.8	0.933	0.789	2.4180	

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.78%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	WB_SW1	48	16.012	0.178	55.8	0.0283	0.0000	OK
180 minute winter	WB_SW2	132	15.670	0.558	106.7	7.4255	0.0000	SURCHARGED
600 minute winter	WB_SW3	600	15.392	0.872	76.0	7.0629	0.0000	SURCHARGED
600 minute winter	Western Basin	600	15.390	0.940	74.6	863.0579	0.0000	SURCHARGED
60 minute winter	Western OF	300	14.350	0.850	11.5	0.0000	0.0000	OK
30 minute winter	Gravel 3	20	16.116	0.166	108.7	36.6589	0.0000	OK
60 minute winter	Gravel 2	47	16.188	0.238	193.5	164.2190	0.0000	FLOOD RISK
60 minute winter	Gravel 1	47	16.215	0.265	192.1	187.4566	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	WB_SW1	1.000	WB_SW2	55.8	0.878	0.675	7.3897	
180 minute winter	WB_SW2	1.001	WB_SW3	100.4	1.610	0.881	3.4646	
600 minute winter	WB_SW3	1.002	Western Basin	74.6	1.319	1.061	1.2198	
600 minute winter	Western Basin	Hydro-Brake®	Western OF	11.5				1163.6
30 minute winter	Gravel 3	3.000	WB_SW3	95.2	1.529	0.604	3.9387	
60 minute winter	Gravel 2	2.000	WB_SW2	67.2	1.735	1.036	2.1479	
60 minute winter	Gravel 1	1.000a	WB_SW1	55.8	1.002	1.134	3.1837	

Calculations – UKSuDS Tool

Surface water storage requirements for sites

www.uksuds.com | Storage estimation tool

Calculated by: [redacted]

Site name: Kent Street Substation

Site location: Kent Street, Wineham

This is an estimation of the storage volume requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). It is not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the design of the drainage scheme.

Site Details

Latitude:	50.98814° N
Longitude:	0.24929° W
Reference:	1771569364
Date:	Dec 06 2022 15:31

Site characteristics

Total site area (ha):	5.9
Significant public open space (ha):	0
Area positively drained (ha):	5.9
Impermeable area (ha):	5.9
Percentage of drained area that is impermeable (%):	100
Impervious area drained via infiltration (ha):	0
Return period for infiltration system design (year):	10
Impervious area drained to rainwater harvesting (ha):	0
Return period for rainwater harvesting system (year):	10
Compliance factor for rainwater harvesting system (%):	66
Net site area for storage volume design (ha):	5.9
Net impermable area for storage volume design (ha):	5.9
Pervious area contribution to runoff (%):	30

* where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50% of the 'area positively drained', the 'net site area' and the estimates of Q_{BAR} and other flow rates will have been reduced accordingly.

Soil characteristics

	Default	Edited
SPR HOST:	--	0.6

Flow inputs

	Default
Q1 (l/s):	52.6
Q1 (l/s):	45.9
Q30 (l/s):	116
Q100 (l/s):	149.9

Hydrological characteristics

	Default	Edited
Rainfall 100 yrs 6 hrs:	--	68.49
Rainfall 100 yrs 12 hrs:	--	80.34
FEH / FSR conversion factor:	1.28	1.04
SAAR (mm):	793	791
M5-60 Rainfall Depth (mm):	20	20
'r' Ratio M5-60/M5-2 day:	0.4	0.4
Hydological region:	7	7
Q_{BAR} for net site area (l/s):	59.75	59.75

Design criteria

Climate change allowance factor:	1.45
Urban creep allowance factor:	1
Volume control approach	Flow control to max of 2 l/s/ha or Qbar
Interception rainfall depth (mm):	5
Minimum flow rate (l/s):	2

Site discharge rates

	Default	Edited
1 in 1 year (l/s):	45.9	45.9
1 in 30 years (l/s):	59.8	59.8
1 in 100 year (l/s):	59.8	59.8

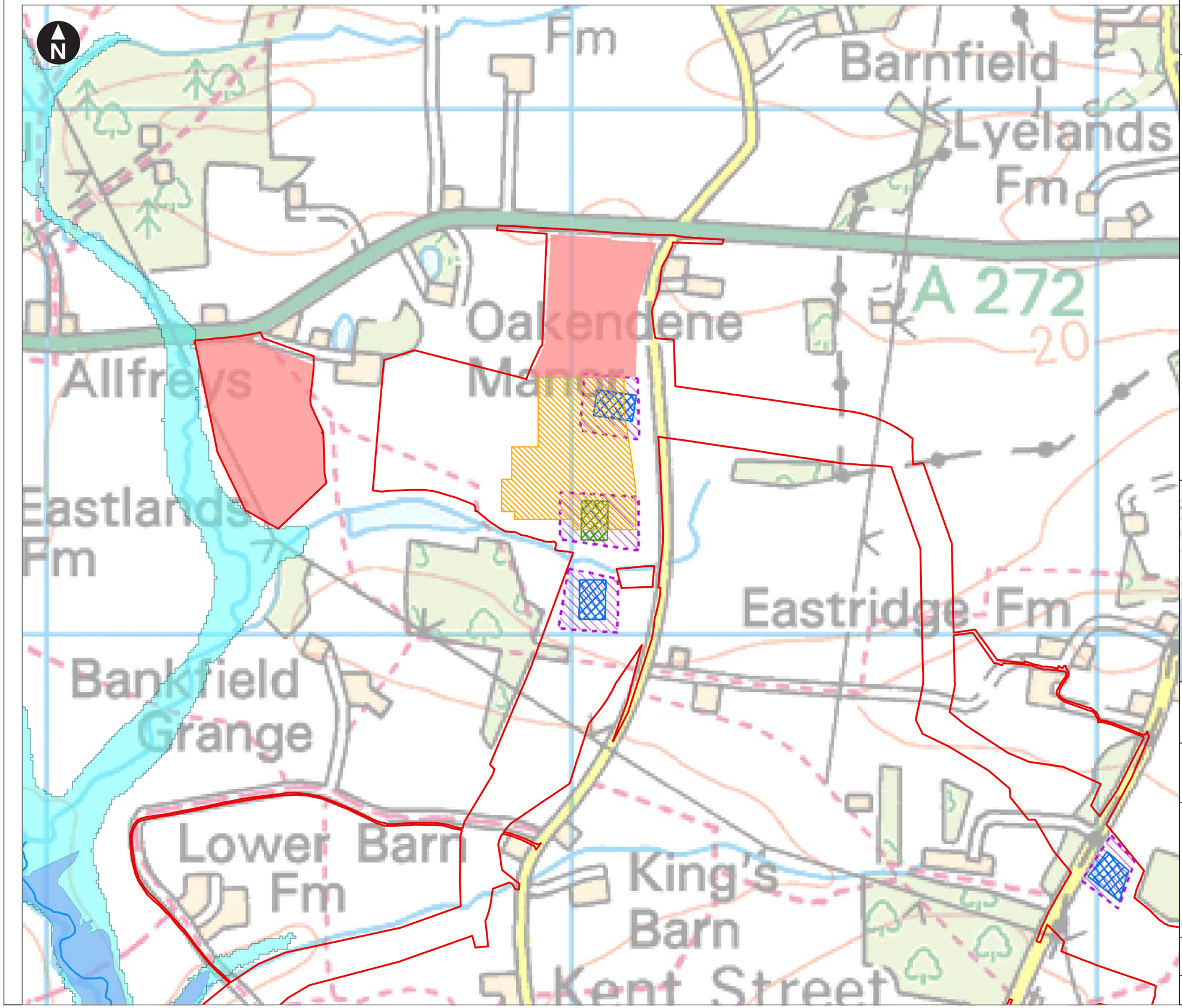
Estimated storage volumes

	Default	Edited
Attenuation storage 1/100 years (m^3):	3812	3812
Long term storage 1/100 years (m^3):	0	0
Total storage 1/100 years (m^3):	3812	3812

This report was produced using the storage estimation tool developed by HRWallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at http://uksuds.com/terms-and-conditions.htm. The outputs from this tool have been used to estimate storage volume requirements. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

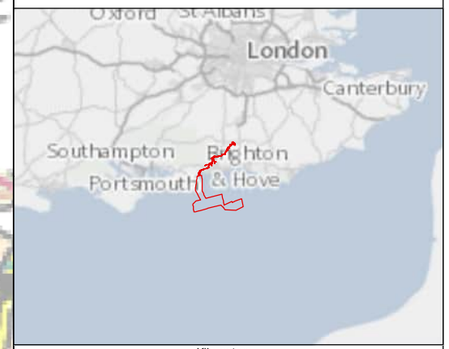
Annex B
Supporting Information for FR1.3 (Figures)

Figure 1



Key

- Proposed DCO Order Limits
- Onshore substation site
- Temporary construction compounds
- Trenchless Crossing (TC) compounds
- Trenchless Crossing (TC) compound alternatives
- Trenchless Crossing (TC) limits of deviation
- Flood Storage Areas
- Spatial Flood Defences
- Main rivers
- Flood Zone 3
- Flood Zone 2
- Flood Zone 1



Kilometres
0 0.03750.075 0.15 0.225 0.3

1:7,000

British National Grid Transverse Mercator

Rampion Extension Development

Rampion 2 WIND FARM

Rampion 2 Offshore Wind Farm

Figure 1 Flood map for planning: Oakendene onshore substation site

Flood Risk Assessment

Examination

System Identifier:	Version:
42285-WSPE-EX-ON-FG-OY-1917_v2	1.0

Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WSP	HADJE	SUTET	08/04/2024	FINAL

Figure 2

522600 522800 523000 523200 523400

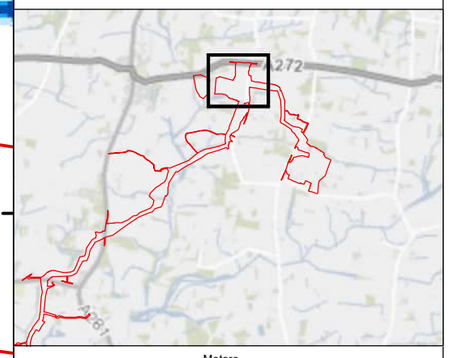
122800 122600 122400 122200

Key

- Proposed DCO Order Limits
- Onshore substation site
- Swale
- Filter drains
- Attenuation basins

Risk of Flooding from Surface Water flood extent

- > 3.33% AEP - High risk of surface water flooding
- 1%- 3.33% AEP - Medium risk of surface water flooding
- 0.1 - 1% AEP - Low risk of surface water flooding



Meters
0 12.5 25 50 75 100
1:3,000
British National Grid Transverse Mercator

Rampion Extension Development

Rampion 2 WIND FARM

Rampion 2 Offshore Wind Farm

Figure 2 Oakendene onshore substation: Indicative SuDS plan and risk of flooding from surface water

Flood Risk Assessment

Examination

System Identifier:	Version:
42285-WSPE-EX-ON-FG-OY-3615	1.0

Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WSP	HADJE	SUTET	08/04/2024	Final

Annex C
Supporting Information for FR1.4

WSCC/HDC 27/02/24 Meeting Minutes

Meeting Minutes

Date: 27/02/2024 09:30 – 11:00 **Meeting at:** Online – Microsoft Teams

Subject / Purpose:
Rampion 2: Flood Risk and Drainage Expert to Expert meeting

Attendee	Role
[redacted]RC) - WSP	Flood risk and sustainable drainage
[redacted]JP) - WSP	Flood risk and sustainable drainage
[redacted](FK) - Rampion Extension d	Rampion 2 Onshore Consents Manager
[redacted]KM) – West Sussex County Council (WSCC)	Lead Local Flood Authority, flood risk and drainage lead
[redacted]MP) – Horsham District Council (HDC)	Planning – Project coordinator for Rampion 2

Apologies: None received

Overview of meeting
This meeting enabled experts from WSCC, HDC and Rampion 2 to discuss flood risk and drainage topics of joint interest in the Statements of Common Ground (SoCG), which are based on the Principal Areas of Disagreement (PADs). The specific focus for this session was on concerns in relation to flood risk and drainage at the proposed Oakendene substation site, and to understand the basis for the WSCC and HDC PADs.

Actions Summary

Number	Action
1	KM to forward to the Applicant all relevant photos and videos of the flooding (particularly Oakendene substation site) held by WSCC.
2	MP advised CowfoldvRampion group to submit their Local Impact Assessment report to the Applicant for consideration (particularly the additional photographs).
3	RC & JP agreed to review the photographs of flooding (once provided) and respond considering whether the photographs suggest an alternative flood extent (compared to the Environment Agency's Risk of Surface Water flood map used in the FRA) should be considered in the FRA.
4	RC, FK & JP to consider securing mechanism and wording for groundwater monitoring at the Oakendene substation site to resolve the WSCC55 PAD.
5	RC to share draft updates on SoCG for review and feedback from WSCC and HDC. Updates to include PADs to be transferred to SoCG, and overarching statements of agreement on FRA, OODP and DCO Requirements to include in the SoCGs.
6	RC to draft overarching statements of agreement on FRA, OODP and DCO Requirements to include in the SoCGs.
7	KM and MP to review the wording of DCO Requirements 17, 18 and 22, and advise whether they are happy for these to be acknowledged as agreed in the SoCGs.

8	FS advised that the alternatives response at deadline 1 can make reference to flood risk, to help acknowledge that flood risk was considered in the substation site selection process.

	Topic of Discussion	**Actions**
1	**Introductions** The attendees (re)introduced. RC queried whether the informal arrangement between WSCC and HDC, for HDC to support WSCC in their LLFA responsibilities, as had been advised during the June 2022 consultation meeting, remained in place. KM and MP confirmed that HDC's -drainage engineer who undertook the aforementioned support (Martin Brightwell) is no longer in post, and thus the informal arrangements were no longer in place and the remit on flood risk and drainage matters would be principally led by WSCC in its capacity as LLFA. KM confirmed that all LLFA responsibilities would be performed by WSCC moving forward.	None
2	**Flood risk and drainage approach taken in the application (and initial feedback from WSCC & HDC)** RC ran through the approach to flood risk and drainage in the application submission, and how the general approach was consistent with that presented at PEIR stage, and consulted on and agreed with WSCC, HDC (Martin Brightwell) and ADC in June 2022 (as well as with MSDC in April 2023) post-PEIR. KM, acknowledged that RC's explanation of the general approach was consistent with his memory of previous consultation. In relation to the Oakendene drainage layout, KM queried whether the proposed filter drains indicated along the new access road in the north, and on the western side of the substation would be sufficient to manage the surface water flow pathways. KM also queried the proposals to address the flow pathways along the eastern side. RC ran through the flood mechanisms as well as the flexibility in the Outline Operational Drainage Plan (secured through DCO Requirement 17), and how further modelling would be undertaken at detailed design stage to inform the sizing of drainage features to ensure the applicants commitment to adhering to National Grid target guidance for flood risk resilience would be met (secured through the Design and Access Statement). MP highlighted that planting measures are also proposed on the western side of the substation to address potential landscape and visual effects, and queried whether the applicant is confident that both landscape and visual and flood risk and drainage measures can be delivered in this area of the site given the limited space. RC highlighted that the flow pathway on the western side is small, with a very limited upstream catchment, and thus it is anticipated that a filter drain would be sufficient. Furthermore, FK reiterated that the substation footprint in indicative, what is shown in the application is the maximum extent, and that commitments to other measures (other than drainage) are also secured in the application.	None

3	**WSCC & HDC – additional information** KM confirmed that the additional information since the April and June 2022 ,meetings has primarily come from the CvR group. KM queried whether the photographs suggest an alternative flood extent (compared to the Environment Agency's Risk of Surface Water flood map used in the FRA) should be considered in the FRA. KM and MP shared onscreen a number of photographs that had been taken by the CowfoldvRampion group, which were anticipated to be submitted as part of the upcoming CvR LIA. RC, JP and FK confirmed that the applicant has seen some of these photographs before, but many had not been shared previously. A discussion took place, including matters such as the location of the photographs, time of year, the notably wet autumn (and winter) 2023/24, whether the flooding was at/near the Oakendene substation site or elsewhere, the likely depth of flooding, and whether the photographs indicated groundwater flooding, or ponded surface water.	1. KM to forward to the Applicant all relevant photos and videos of the flooding (particularly Oakendene substation site) held by WSCC. 2. MP advised - CowfoldvRampion group to submit their Local Impact Assessment report to the Applicant for consideration (particularly the additional photographs). 3. Applicant agreed to review the photographs of flooding and respond considering whether the photographs suggest an alternative flood extent (compared to the Environment Agency's Risk of Surface Water flood map used in the FRA) should be considered in the FRA.
4	**Additional information from applicant** RC & JP presented photographs recently (February 2024) taken by the applicant at the same locations as some of the photographs that had been shared with the applicant ahead of this meeting, as well as locations at and adjacent to the ordinary watercourse along the southern boundary of the Oakendene site. RC & JP explained that some of the locations related to the existing man-made lake located downstream of the proposed substation footprint. RC highlighted that no flooding was observed in the February 2024 photographs taken by the applicant, thus indicating that the flood mechanism is surface water rather than groundwater, which would be expected to peak seasonally in March, at the end of the winter.	None
5	**Discussion on Principal Areas of Disagreement** RC set out the three Principal Areas of Disagreement for WSCC in turn, the applicants response, and sought to agree actions to transfer each to Statements of Common Ground (SoCG). WSCC53 (Acknowledgement of Ordinary Watercourse Consent from WSCC as LLFA). Following discussion, all parties agreed that this matter can be transferred to the SoCG as an agreed matter. WSCC54 (Surface water flood risk considered within emergency response plan). KM challenged whether stockpiling of materials could impact flow pathways. RC highlighted the measures in this regard set out in Table 8.1 of the FRA, which are secured in the Outline Code of Construction Practice, and the surface water mapping provided in Figure 26.2.5 of the FRA. Following discussion, all parties agreed that this matter can be transferred to the SoCG as an agreed matter. WSCC55 (winter flooding and groundwater flood risk at Oakendene substation). Regarding comments around potential for (possibly perched) groundwater flooding, KM queried groundwater levels from any groundwater monitoring undertaken by the applicant. RC confirmed that ground investigations would be undertaken subsequently to inform detailed design, but that generally, groundwater flood risk was not considered a risk at the substation on the basis of geology (clay), Horsham FRA and advice previously provided by HDC (Martin Brightwell, flood officer at the time of the June 2022 consultation). Following discussion, KM advised that this matter can be transferred to the SoCG as an agreed matter, subject to the following. Groundwater monitoring at one location, ideally over the winter period, at the detailed design stage, ie post-gaining of consent. KM advised that this could be a separate commitment or text within the Outline Operational Drainage Plan.	4. RC, FK & JP to consider securing mechanism and wording for groundwater monitoring at the Oakendene substation site to resolve the WSCC55 PAD. **5.** RC to share draft updates on SoCG for review and feedback from WSCC and HDC, including PADs to be transferred to SoCG.

	RC & FK agreed to the principle of the request, and advised that the applicant would consider the mechanism by which to secure this in the application.	
6	**Statement of Common Ground** RC set out the aim of including overarching statements of agreement with the FRA, OODP and DCO Requirements in the SoCGs, acknowledging that WSCC55 PAD may need to be resolved first. KM agreed with the suggested approach of the applicant drafting SoCG wording and submitting to WSCC for agreement. MP acknowledged that with LLFA role remaining with WSCC as the LLFA, it may be appropriate to acknowledge in the SoCG that the responsibility for technical review of flood risk and drainage matters is with WSCC as the LLFA.	6. RC to draft overarching statements of agreement on FRA, OODP and DCO Requirements to include in the SoCGs. **7.** KM and MP to review the wording of DCO Requirements 17, 18 and 22, and advise whether they are happy for these to be acknowledged as agreed in the SoCGs.
7	**Sequential Test** In relation to alternatives, MP highlighted that the Sequential Test now needs to consider all potential sources of flood risk. RC advised that the decision-making process for considering potential site options had considered all sources of flood risk, as detailed in Section 9.1 of the FRA. Ultimately, it was concluded that provided appropriate mitigation is implemented (to capture and convey surface water flow pathways), that the flood risk at both (potential onshore substation) sites (Oakendene and Wineham) would be comparable, and on this basis there was not a clear-cut preference in terms of the flood risk sequential approach.	8. FS advised that the alternatives response at deadline 1 can make reference to flood risk, to help acknowledge that flood risk was considered in the substation site selection process.

Annex D
Other Minutes

WSCC/MSDC 01/04/22 Meeting Minutes[6]

[6] It is acknowledged that these meeting minutes were missing from the ES as an errata. Although they predominantly relate to the Bolney Extension site (and not Oakendene substation site) they have been included for completeness and will be reissued as part of the **Flood Risk Assessment [APP-216] of the ES** at a future Examination deadline.

Meeting Minutes

Date: 1 April 2022 10:30-11.30am **Meeting at:** Online – Microsoft Teams

Subject / purpose:

Targeted stakeholder meeting to discuss local sources of flood risk

Attendees:

[redacted] RWE, electrical engineer (AB)
Wood, water environment assessment lead (GD)
Wood, project engineer (IM)
[redacted] – Wood, EIA co-ordinator (JZ)
[redacted] – West Sussex County Council, LLFA (KM)
[redacted] – Mid Sussex District Council, flood officer (NJ)
[redacted] RWE (PW), electrical engineer
[redacted] ood, project engineer (PH)
[redacted] – Wood, flood risk assessment and sustainable drainage lead(RC)

Apologies:

[redacted] RWE

Actions summary

KM to contact EA to determine watercourse consenting details for the Internal Drainage Board area.KM agreed to share the outcome of discussions with the Environment Agency in relation to consents for watercourses in the IDB district.	**KM**
RC confirmed the action to provide the LiDAR map and to provide further information for the ditches on the substation sites.	**RC (actioned on 22/06/22)**
GD confirmed the action to include definitions of land drains in future reports.	**GD**
Wood agreed to check and communicate which districts the substation option sites are in (MSDC or Horsham Council).	**GD actioned - Bolney Rd/ Kent Street Substation Option lies within HDC and the Wineham Lane North Option lies within MSDC**

Wood Group UK Limited
Shinfield Park, Shinfield, Reading RG2 9FW, United Kingdom
Tel +44 (0)118 9131234

`Topic of Discussion	Actions
1 **Welcome and introductions** JZ introduced the meeting.	
2 **Project update** JZ provided a project update, including an updated project programme, the timeframe for the reopening of the formal consultation, the design change review process in response to consultation information received and the upcoming targeted onshore infrastructure formal consultation on proposed changes to the PEIR Assessment Boundary.	
3 **Cable route proposals and drainage considerations** ***Headline comments from the FRSA shared at PEIR stage*** RC noted a general lack of comments from stakeholders relating to the Flood Risk Screening Assessment (FRSA) as provided in support of the Section 42 consultation (PEIR). RC queried whether this was due to the FRSA not having been reviewed, or general satisfaction with the document . KM confirmed that West Sussex County Council (WSCC) have reviewed the PEIR with respect to flood risk and confirmed there are no major concerns from a County perspective. KM advised that this position is on the basis that much of the impacts on flood risk and drainage would be temporary and watercourse crossings in the Rampion 1 construction went well. Particular interest will be paid to areas of the potential cable corridor route that may interact with possible surface water flooding. NJ added that there were no major concerns from Mid Sussex District Council (MSDC), however, it is important to note that most of the proposed red line is not within the MSDC area, and that any advice provided needed to be viewed in this context. NJ advised that MSDC interest will predominantly focus on the Wineham Lane substation option site as (for the most part) Wineham Lane itself forms the western boundary of the MSDC area. KM and NJ suggested another meeting be arranged so that the flood officer from Horsham District Council could attend and provide their views (the Bolney Road/Kent Street substation option site is within Horsham District Council). This was held on 22/06/22. ***Temporary onshore construction corridor*** GD refreshed the group on the PEIR proposals which will be subject to further refinement as the design evolves. In summary, a direct buried cable will be constructed inside a temporary construction corridor comprised of trenches in which cables will be laid, stockpiles of excavated materials and a temporary haul road, used to transport materials in the corridor. The PEIR stated that the corridor would be approximately 50m wide, although ongoing refinement work is likely to	

reduce this to approximately 40m. GD shared an illustration of a standard cable corridor, which can be found in the accompanying slides. Space to provide temporary drainage infrastructure has been included in the onshore part of the PEIR Assessment Boundary.

Construction methodologies

Trenches will be backfilled with originally excavated material and some stabilised backfill and Cement Bound Sand (CBS) to protect the ducts.

The trenched will be laid, backfilled and reinstated along regular sections (typically 600m-1,000m) in as short a timeframe as practicable.

For ordinary watercourse crossings, open cut crossing methodologies (such as damming and overpumping) will be predominantly used during trench excavation and duct installation.

For crossing of major rivers or major roads/rail networks trenchless methodologies, such as HDD, will be used. Where possible, these HDD crossings would be from outside the floodplain on one side to outside on the other.

The onshore cable corridor

RC shared maps of the proposed onshore cable corridor route, which can be seen on the accompanying slides. The Weald clay area is likely to be the area of most interest in terms of local flood risk due to the number of watercourses in the area and the potential for runoff due to the underlying geology and soils.

KM added that most of the flooding risk would be associated with the River Adur, which would be the remit of the Environment Agency (EA). With respect to surface water, KM advised that the WSCC comments on the PEIR (and FRSA) were based on previous flood events rather than the theoretical scenarios as presented in the Environment Agency's flood map for surface water (and as presented in the FRSA).

Drainage good practice = embedded environmental measures

GD refreshed the group in the Water Environment chapter of the PEIR, and particularly the embedded measures for drainage good practice, which were included in the draft Code of Construction Practice.

Drainage measures to manage, attenuate and, if necessary, treat runoff will be included in all elements of temporary and permanent infrastructure. The main requirement for treatment along the temporary construction corridor would for managing silt/sediment in run-off.

GD gave an overview of the potential options available to manage surface water during construction, including temporary cut off drains installed upgradient and parallel to trenchlines to minimise the amount of clean run-on and groundwater that reaches the trench and stockpiles. The drains would discharge to local drainage ditches as appropriate, but be allowed to infiltrate wherever possible.

Anything dewatered from the trenches and any unclean site runoff will be captured and treated accordingly (with filter drains, swales, silt busters and/or silt netting etc.) before being discharged to ground or surface water.

Construction drainage discussion

Wood held a meeting on 22nd June with WSCC, Arun Council and Horsham Council to discuss level of detail required for

RC advised that the construction contractor will develop the details and methods of construction, including drainage, within the framework of what is presented in the ES, after the DCO has been granted. Thus, it is important to understand the expectations of stakeholders are for construction drainage in order to provide this framework, as well as to understand the level of detail required for DCO Application. This question can be answered in a future meeting that also includes Horsham Council. Martin Brightwell was given as the contact for Horsham.

construction drainage at DCO Application.

RC reiterated that these works are temporary and will be progressed in sections. On this basis, it is anticipated that engineered solutions would be both disproportionate and impractical based on the timeframes they would be required (and likelihood of being required during their short lifetime). The use of methods such as filter drains and/or swales paired with silt fencing are considered cost-effective and appropriate methods which could be rapidly implemented by the construction contractor. Additional measures such as silt busters could be optionally added if the Ecological Clerk of Works (ECoW) deemed necessary based on observations on-site.

RC & GD advised that the anticipated corridor width of 40m would be narrower in some places (e.g. areas with ecological constraints) and wider in other areas (e.g. where HDD is occurring). Importantly, there is a general drive across the project to narrow the construction corridor (and red line) as much as possible to minimise landowner interactions and environmental impacts. However, we are conscious that space needs to be retained to enable construction drainage measures to be effectively implemented, so we are trying to strike that balance in determining appropriate approaches to construction drainage, whilst minimising impacts of construction footprint overall.

KM noted that what has been presented in this meeting covers as much as can be said at this point in time. It is encouraging that drainage will be assessed on a needs basis as construction starts, with the contractor being supported by environmental personnel. It is very likely that flow routes will be cut off while excavating the trenches, but this will not be every location. Therefore, some locations will need drainage as described and others will not.

Wood to include definition of land drain in all reports.

Land drainage

GD advised that land drainage systems will be maintained so they continue to function during construction and reinstated upon completion of works with care.

NJ asked for clarification on the term "land drain" as it can mean buried pipes or shallow ditches installed by farmers. RC & KM confirmed that buried pipes within agricultural fields are being discussed in this case. NJ requested that all reports clearly state the definition of land drain as buried pipes, as there are landowners in Mid Sussex that refer to ditches as land drains. RC agreed this is useful to include such a definition.

RC advised that, in the Flood Risk Assessment and the Water Environment chapter, land drains will be referenced but not considered as a major flood risk as this is likely to be addressed elsewhere in the ES, such as the Land Use chapter. This is because the impact of disrupted land drainage would be to impact agricultural land quality rather than the water environment and/or the built environment.

KM asked if the locations of existing land drainage systems would be known in advance of excavation. GD reiterated the position set out in the PEIR, which is that surveys of land drains are not being undertaken pre-application submission and would likely happen post-application but prior to the works commencing.

KM noted that if a trench excavation severs land drainage then there is the potential for significant risk of water flowing into the trench. RC highlighted the filter drains being proposed (to be included within the fenceline at both sides of the route) would intercept the land drainage as well as surface water.

KM was concerned with what happens to the filter drain afterwards if the field drain flow has been interrupted. RC advised that the filter drains would likely be removed and the land drainage reinstated. RC noted that construction engineers generally advise that the new systems installed are usually an improvement, being in better condition than the existing systems, which may be in poor condition and require replacement/maintenance in any case.

Phasing of cable corridor

PH clarified that the 600m-1,000m cable trench corridor referred to in the PEIR refers to the area of the cable corridor in which the topsoil will be cleared to one side, the fencing erected, a haul road put in place and so on. In terms of open trench itself, the usual approach is for approximately 100m of cable trench to be cut each day (usually in 10m sections), i.e. not a 600m+ length trenched in one go. KM asked what happens to surplus material at the end of the day as there is a small risk of stockpiles of excess material interrupting flow paths. RC noted that there are PEIR commitments to avoid stockpiling in floodplains and to leave gaps in the stockpiles to allow water to flow through. RC noted that, because of the anticipated 10m at one time approach, the stockpiles associated with trenching works would be limited in footprint at any given time, and very temporary in nature.

NJ asked for clarification on the cut off ditches etc. Would these be constructed for the entire 600-1,000m area or just the 100m sections? RC & PH confirmed that it would be for the entire 600-1,000m area and that the ditches would be installed before the construction of the haul road, to ensure drainage is in place ahead of use of the haul road for cable construction.

NJ asked how long the temporary drainage would be in place for, to help understand the maintenance requirements. RC noted that temporary drainage is likely to remain in place for a matter of months, because the cables would be installed in the ducts at a later date (sometime after the trenching to install the ducts is complete. Only once the cables are in place (and tested) would the land be reinstated and the temporary drainage be removed. RC noted that the need for maintenance would depend upon how wet the weather is - if the weather is consistently dry, perhaps no maintenance will be required, whereas if the weather is particularly wet then multiple instances of maintenance could be required. The need for maintenance would be a decision made by the contractor (who would be on-site throughout construction), informed by on-site observations by the ECoW.

Summary points on construction drainage

KM confirmed that WSCC are happy with the embedded measures proposed for construction drainage and the level of detail. KM advised that details of the

monitoring regime to assess maintenance requirements would be welcome, but otherwise there are no concerns with the approach at this time.

RC queried whether there were any insights from Rampion 1 or equivalent projects that would be useful. KM advised that Horsham Council and Arun Council representatives are best placed to advise as they were more involved with Rampion 1 than WSCC, but as far as he recalled the only issues related to reinstatement of the cable running through Worthing Borough rather than the construction methods.

4 **Onshore substation proposals and drainage considerations**

Overview of proposals 0.

GD refreshed the group on the permanent substation information included in the PEIR. Two potential option sites were considered in the PEIR, of which one would be assessed in the ES for the DCO application:

- Bolney Road/Kent Street; and
- Wineham Lane North.

The permanent built footprint is anticipated to be approximately 6ha, with a wider red line boundary included to accommodate construction activities and to provide associated environmental measures where necessary (such as drainage, screening, planting etc). We anticipate that an Outline Operational Drainage Strategy (OODS) will be part of, or will accompany, the Flood Risk Assessment (FRA) at the ES stage for the selected onshore substation. RC added that a substation design is not anticipated to be included as part of the DCO Application, so the OODS will be limited in what it can present. It will be more high-level and will set the parameters of what the design should account for and achieve within the space available. The drainage design would be developed alongside the design of the sub-station, which is anticipated to occur post-receipt of consent.

Comments relevant to both sub-stations

RC shared the Environment Agency Risk of Flooding from Surface Water (RoFSW) Flood Maps for both substation option sites, as were included in the PEIR. This can be found on the accompanying slides.

RC refreshed the group on the approach taken to fluvial flood risk at and adjacent to the option sites in the PEIR , which was to use the 0.1% (1 in 1,000) AEP extent as a proxy for the 1% AEP (1 in 100) + climate change extent. RC asked at what point would concerns be raised about the proximity of permanent development to the watercourse and surface water flood extents. KM & NJ advised that they would be satisfied with the built development avoiding anything within the 0.1% AEP (1 in 1,000) extent, and that it is also generally best to avoid development within 5m at the top of bank of any watercourse, although if deemed necessary this can be reduced to 3.5m.

The substation's drainage provides an opportunity for a variety of permanent sub-features, although the location and extent of these will be subject to other constraints. In terms of attenuation, it is anticipated that this can be achieved as an inherent part of the design - to ensure electrical safety, sub-stations are constructed within a "box" filled with gravel. Where the underlaying ground is

permeable this is effectively a large soakaway. In this area, underlain by clay, run-off will likely not soakaway and would need to be collected and discharged. As such, attenuation is provided within the footprint of the substation, unlikely requiring any further attenuation features. Whatever else might be needed would probably have a minimal footprint, maybe for some final treatment before discharge and to convey run-off to nearby watercourses.

Wood to provide LiDAR map. This was presented in a follow up meeting with WSCC, HDC and ADC on 22nd June 2022.

With reference to the prospect of watercourses on-site being 'lost' as part of the substation development, KM advised that the preferred option would always be to leave the watercourse in situ and bridge over them. RC advised that this could be challenging if the watercourse bisected the 'box' discussed earlier, but that the degree to which existing watercourses would be lost is not currently known as the substation design is not currently known. KM added that there needs to be an understanding of what may drain into such watercourses from outside of the site as well. RC suggested that, where there is an upstream catchment, options could include rerouting around the substation footprint, or account for the inflow in the drainage design of the substation (the scale of the upstream catchment would influence the ability to achieve this).

Wineham Lane North

NJ advised that the north south orientated ditch bisecting the Wineham Lane North site is identified as the upstream section of Bolney Sewer in Ordnance Survey map data. NJ advised that it flows south to north, before turning east and heading along the northern site boundary. NJ expressed concern at the prospect of the upstream section of this watercourse being lost to development, citing concern at the potential impact this could have on drainage on-site and in the wider area. NJ recommended that the site be investigated to ascertain the characteristics of the stream. NJ confirmed that the concern relates to the loss of function of the watercourse in providing drainage, and not the loss of the watercourse itself (i.e. not a Water Framework Directive (WFD) concern).

NJ noted that the north-south section of Bolney Sewer is not indicated in the surface water flood map. RC advised that this is because this part of the sewer does not have a natural topographic catchment draining to it- the upstream part of the topographic catchment continues to the west along the northern site boundary. On this basis, RC advised that we anticipate that the drainage system for the substation can be designed accordingly to account for the lost part of the watercourse. NJ advised that if a stream or ditch is found on site, MSDC would be very hesitant to allow it to be built over without any evidence that this would not affect groundwater flow. RC suggested that LiDAR data demonstrating the limited (and/or lack of) catchment draining to this section of watercourse and thus (anticipated) limited function it performs could provide the evidence requested, and agreed to provide a map showing this. NJ agreed this is a good starting point, and once the amount of land draining towards the watercourse is understood, then it can be ascertained if this will be an issue. NJ agreed that the drainage installed in the site may need to account for the lost section of watercourse.

RC noted that to the West and South of the site, the surface water flood map indicates negligible run-on flow pathways (even during the 0.1% AEP (1 in 1,000) event) for which minimal, if any, measures would be needed. There is one that can be seen intersecting the "Wineham Lane North" label on the map, which could be

captured in a cut-off drain that routes it around the boundary or could just be accounted for in the on-site drainage system.

Bolney Road/Kent Street

NJ advised that this site is located in Horsham rather than MSDC. KM noted that input from the flood officer at Horsham Council should be sought.

RC noted that this site presents more challenges from a water environment perspective than the Wineham Lane North option site, but none that are considered to be insurmountable. RC highlighted the surface water flow run-on pathway from the north, with water ponding on the Northern side of Bolney Road, which the mapping indicates would eventually spill over a low point in the road and proceed into the centre of the Northern site boundary. The mapping indicates that this run-on water would then proceed southwards through the site before turning towards the Eastern site boundary and continuing Southwards along the Eastern site boundary, ultimately towards the stream (a tributary of Cowfold Stream) running along the southern boundary of the site.

RC noted that a good proportion of the flood extent indicated would come from rain falling on the site itself, that some appears to be running onto the site from the North. RC advised that it is anticipated that this can be addressed through on-site drainage measures, with the water run-on being captured in the northern part of the site and either attenuated and/or routed around any substation proposals in new formal drainage channels/features. Such an approach, separate to the drainage of rainwater falling on the sub-station itself, could provide betterment to flood risk both onsite (enabling development in areas currently indicated to be at risk of surface water flooding) and offsite if sufficient attenuation is provided to reduce the rate of flow through the site.

KM advised that more information would be required on the proposals for this site, including If the capacity remains the same from the basin diverting around the site, the approach outlined should be fine in principle.

With respect to the potential for watercourses onsite to be lost, the 2 ditches bisecting the site were highlighted for discussion. KM noted that the existing ditches are likely to be only taking water off the fields, but this would need to be ascertained. KM advised that it is preferred to avoid filling in ditches, on the basis that insufficient consideration of their function has proven 'costly' in the past. KM suggested that the design could consider retention of the ditch and discharge into it. RC noted that, due to the anticipated footprint of the substation 'box' at approximately 6ha, it is anticipated that at least one ditch would likely need to be 'lost'. RC agreed to provide LiDAR data will help to determine the nature of the catchment.

. RC suggested that loss of the ditch could be accounted for in the design - the drainage for the substation would account for any rainfall falling on the substation site itself and that any upstream catchment for lost watercourse/ditches would be re-provided or accounted for. RC also noted that the suggested SuDS would provide an opportunity to offset the loss of biodiversity habitat associated with any lost ditches.

RC presented the understanding of flood risk associated with the tributary watercourse of Cowfold Stream on the southern site boundary, and shared the

Wood to provide further information for the ditches on the Bolney Road/Kent Street substation site. This was presented in a follow up meeting with WSCC, HDC and ADC on 22nd June 2022.

surface water flood map of the entire contributing catchment to provide context. Advice in relation to flood risk from this stream was recorded above.

Permits and consents

KM advised that WSCC do not grant watercourse consents, as this is done by the districts and boroughs. South Downs National Park would do the same, delegating the consenting to Arun District Council (ADC). KM advised that a conversation needs to be had with the Environment Agency to see if the minor ditches in the Internal Drainage Board area would be consented by the EA or if they would delegate to ADC. KM agreed to have this conversation with the EA prior to the next meeting and share the information obtained.

KM to contact EA to determine watercourse consenting details for the Internal Drainage Board area.

5 **Actions and AOB**

Wood agreed to check and communicate which districts the substation option sites are in (MSDC or Horsham Council).

Wood checked and the Bolney Rd/ Kent Street Substation Option lies within HDC and the Wineham Lane North Option lies within MSDC.

JZ confirmed that Martin Brightwell at Horsham Council should be included in future meetings. KM added that Paul Cann from Arun District Council (ADC) should also be included as the cable route starts there. RC noted that most of the cable corridor in Arun was located in the Internal Drainage Board area, which is managed by the Environment Agency, but acknowledged that there are likely to be sections of the corridor that would fall under ADC's remit and agreed to include them in future meetings.

KM agreed to share the outcome of discussions with the Environment Agency in relation to consents for watercourses in the IDB district.

RC confirmed the action to provide the LiDAR map and to provide further information for the ditches on the substation sites.

GD confirmed the action to include definitions of land drains in future reports.

Wood have provided further information on the LiDAR map and information on the Bolney Rd/ Kent Street ditches. This was presented in a follow up meeting with WSCC, HDC and ADC on 22nd June 2022.

Rampion 2
WIND FARM

Appendix F
SLV: Examples of Permitted NSIPs affecting special qualities and statutory purpose of national landscapes

East Anglia TWO Offshore Wind Farm

East Anglia TWO offshore wind farm is an example of permitted infrastructure with a similar magnitude of impact on views from a National Landscape. The East Anglia TWO offshore wind farm project is located approximately 32km from the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (SCHAONB) at its closest point (comparable to Isle of Wight AONB for Rampion 2 which is over 31 km from its closest point).

With regards to the statutory purpose of the SCHAONB, in the Examining Authority's (ExA) Report of Findings and Conclusions (Planning Inspectorate, October 2021), the ExA noted (paragraph 9.5.44) that Natural England and the Applicant were in agreement that significant adverse effects would occur on multiple landscape and visual receptors within the SCHAONB.

Although the Applicant amended the design of East Anglia TWO, both in terms of the height of the proposed wind turbines and the extent of the array to reduce effects upon the SCHAONB, with the aim of avoiding compromising the purposes of designation of the SCHAONB, the ExA found (paragraph 9.5.50) that *"significant effects would occur to seven of the 18 special qualities of the SCHAONB"* and that although *"such effects will occur in geographically limited locations"* (at the coast) *"the adverse effects will occur a significant number of times throughout the year and especially in the summer months when one would expect visitors to the SCHAONB to be at their highest"*.

The Applicant would note that despite these findings, the ExA were of the view in paragraphs 9.5.51 and 9.5.52 (emphasis added in **bold**) that:

Paragraph 9.5.51 *"The Proposed Development **would not undermine the statutory purpose of the AONB**. While harm is caused to a number of special qualities of the SCHAONB, this still amounts to less than half the number of the AONB's special qualities and is limited to certain locations on the coastal extent of the AONB".*

Paragraph 9.5.52 *"While acknowledging that **significant harm will be caused to these qualities (and areas) this would not compromise the purposes of designation**. The SCHAONB would remain an area of outstanding natural beauty and the reasons for designating it as such would remain".*

These findings are replicated at paragraph 7.31 of the Secretary of State's decision letter (Secretary of State for Business Energy and Industrial Strategy (BEIS), March 2022).

The Applicant would therefore highlight that in respect of the East Anglia TWO project, the Secretary of State found there to be significant harm to the special qualities of the SCHAONB and yet concluded this would not compromise the purposes of the designation.

Awel y Môr Offshore Wind Farm

Awel y Môr Offshore Wind Farm is an example of permitted infrastructure with a similar magnitude of impact on views from a National Landscape. The Awel y Môr Offshore Wind Farm project is located approximately 17 km from the Isle of Anglesey ANOB at its closest point (comparable to Isle of Wight AONB for Rampion 2 which is over 31 km from its closest point).

With regards to designated landscapes, in the Examining Authority's (ExA) Report of Findings and Conclusions (Planning Inspectorate, June 2023), the ExA found (paragraph 5.7.72) that *"Significant effects would also arise for some of the special qualities of the Isle of Anglesey (IoA) AONB"* and that (paragraph 5.7.74) (emphasis added): *"given the harms identified, and whilst the Applicant has sought to avoid compromising the statutory purposes as far as possible, the Proposed Development would fail to conserve or enhance the natural beauty of the IoA AONB, CRDV AONB and ENP designated landscapes, in conflict with this statutory purpose".*[7]

The ExA was satisfied (paragraph 5.7.78) *"significant effects could not be mitigated through a small reduction in the scale of the Proposed Development"* and that *"a substantial reduction in the size of the Proposed Development would be likely to risk the viability of the project".*

The ExA accepted that (paragraph 5.7.94) *"the Applicant has aimed to avoid, as far as possible, compromising the purposes of designation and has had regard to sensitive design taking into account various siting, operational, and other relevant constraints".*

Nonetheless the ExA attributed (paragraph 5.7.95) *"substantial weight to adverse effects on seascape, landscape and visual matters relating to the proposed offshore works against the Order being made".*

The ExA also found that the Applicant's proposed landscape enhancement scheme (paragraph 5.7.96) *"would compensate for some of the seascape, landscape and visual harms identified and would provide benefits to designated landscapes over the longer term"* and (paragraph 5.7.97) although it *"would not strictly mitigate the harm caused by the Proposed Development"… "the landscape enhancement scheme could provide other benefits and would potentially enhance the identified receptors and their special qualities. This would reduce the overall weight the ExA ascribe to harm arising from the adverse effects on seascape, landscape and visual matters from the Proposed Development. However, this weighting would remain within the boundaries of substantial harm".*

When considering all matters in the round (paragraph 10.4.7) the ExA considered that "*the very substantial benefits of the Proposed Development scheme, primarily in terms of both the scale and the national need for the urgently required renewable energy that the Proposed Development would provide but also in terms of local socioeconomic benefits, are sufficient to outweigh the negative impacts"* and the ExA therefore found (paragraph 10.4.8) that *"the benefits of the Proposed Development would outweigh its adverse*

[7] Isle of Anglesey Area of Outstanding Natural Beauty (IoA AONB), Clwydian Range and Dee Valley Area of Outstanding Natural Beauty (CRDV AONB), and Eyri National Park (ENP).

impacts and the ExA recommends that, for the reasons set out in the Report, the SoS should grant development consent".

The Applicant would therefore highlight that in respect of Awel y Môr, substantial harms were identified by the ExA, which found that Awel y Môr failed to conserve or enhance the natural beauty of the designated landscapes (in conflict with their statutory purpose) yet the ExA recommended development consent was granted as it considered the substantial benefits of the Proposed Development would outweigh its adverse impacts.

The Secretary of State for BEIS, September 2023 (paragraph 9.1) *"does not believe that the national need for the Proposed Development as set out in the relevant NPSs is outweighed by the Development's potential adverse impacts"* and therefore (paragraph 9.2) *"decided to accept the ExA's recommendation to consent".*[8]

Sizewell C Nuclear Power Station

The Sizewell C Nuclear Power Station project is located within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (SCHAONB) .

Sizewell C comprises permanent and temporary development to support the construction, operation and maintenance of Sizewell C Nuclear Power Station, located within SCHAONB in Suffolk. The key elements are the main site, including the nuclear power station itself, offshore works, land used temporarily to support construction including an accommodation campus, wildlife compensation land and a series of off-site associated development sites in the local area.

With regards to statutory purpose of the Suffolk Coast and Heaths AONB, in the Examining Authority's (ExA) Report of Findings and Conclusions (Planning Inspectorate, February 2022), the ExA noted (paragraph 5.14.227) that (emphasis added in **bold**):

"Despite the appropriateness of the mitigation measures, we consider residual adverse impacts would remain within the AONB (and SHC) during construction, but these would be temporary and reversible. We therefore conclude that ***although significant adverse effects would be experienced across the whole AONB, we are content that the overall purpose of designation would not be compromised and the AONB would continue to perform its statutory purpose"****.*

The ExA also found (paragraph 5.14.228) that (emphasis added in **bold**):

"The ***wider functioning of the AONB would not be fundamentally impacted*** *and significant adverse effects would be localised. As such, we are content that* ***the overall purpose of designation would not be compromised and the AONB would continue to perform its statutory purpose"****.*

With regards to effects on the SCHAONB, in its decision letter (BEIS, July 2022) the Secretary of State agreed with the ExA's conclusions (paragraph 4.337) (emphasis added in **bold**) that:

[8] Examining Authority (ExA).

"In relation to the overall effect on the AONB, that ***there would be adverse impact on the purpose of the designation, and harm to the identified special qualities of the AONB*** *after taking mitigation into account".*

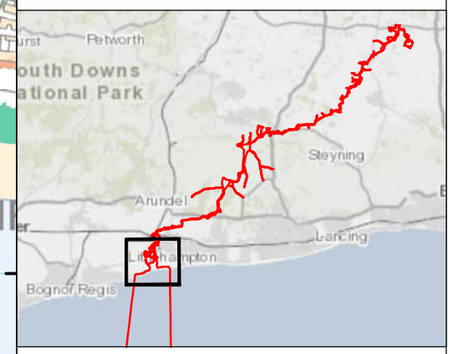
The Applicant would therefore highlight that in respect of Sizewell C, a new nuclear power station located within an AONB, the Secretary of State found that significant adverse effects would be experienced across the whole AONB, with adverse impact on the purpose of the designation and harm to its identified special qualities, yet was content that the wider functioning of the AONB would not be fundamentally impacted, the overall purpose of designation would not be compromised and the AONB would continue to perform its statutory purpose.

Appendix G
TE: Seasonal restrictions for construction due to terrestrial ecology commitments

Key

- Proposed DCO Order Limits
- No HDD works between October to February inclusive
- No surface construction works (in accordance with the Authorised Development) between October to February inclusive

Note. Areas in green identified as floodplain (Flood Zones 2 and 3).



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British National Grid Transverse Mercator

Rampion Extension Development

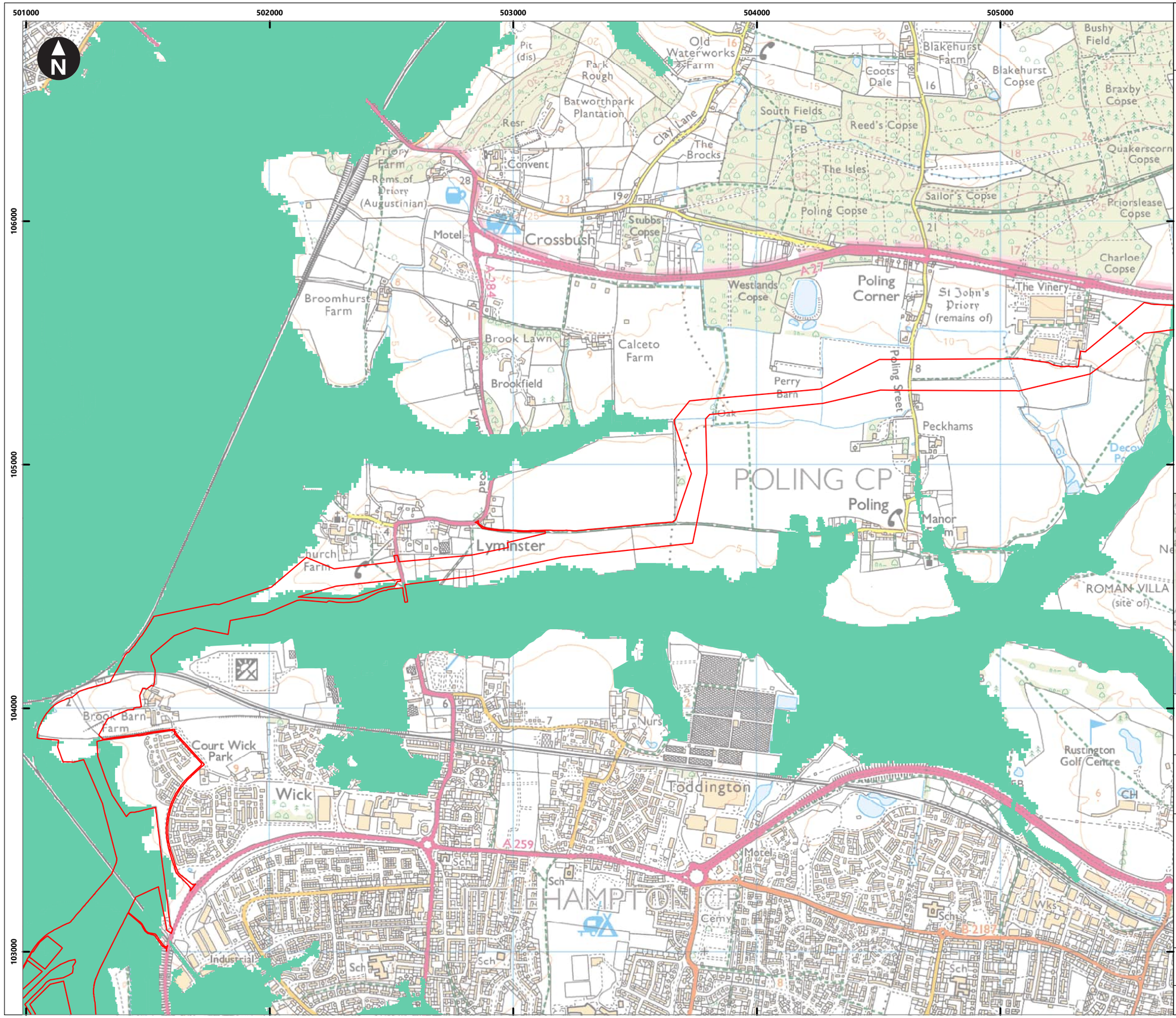
Rampion 2 WIND FARM

Rampion 2 Offshore Wind Farm

Figure 1.1a Seasonal restrictions for construction due to terrestrial ecology commitments

System Identifier:	Version:
42285-WSPE-EX-ON-FG-OL-5449	2.0

Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WSP	HADJE	SUTET	25/04/2024	FINAL



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Ordnance Survey 0100031673

Key

Proposed DCO Order Limits

No surface construction works (in accordance with the Authorised Development) between October to February inclusive

Note. Areas in green identified as floodplain (Flood Zones 2 and 3).

Kilometres
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British National Grid Transverse Mercator

Rampion Extension Development

Rampion 2 WIND FARM

Rampion 2 Offshore Wind Farm

Figure 1.1b Seasonal restrictions for construction due to terrestrial ecology commitments

System Identifier:	Version:
42285-WSPE-EX-ON-FG-OL-5449	2.0

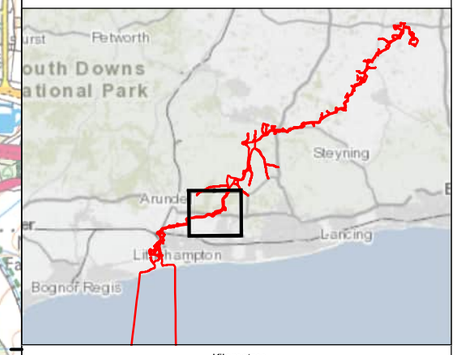
Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WSP	HADJE	SUTET	25/04/2024	FINAL

Key

Proposed DCO Order Limits

No surface construction works (in accordance with the Authorised Development) between October to February inclusive

Note. Areas in green identified as floodplain (Flood Zones 2 and 3).



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British National Grid Transverse Mercator

Rampion Extension Development

Rampion 2 WIND FARM

Rampion 2 Offshore Wind Farm

Figure 1.1c Seasonal restrictions for construction due to terrestrial ecology commitments

System Identifier:	Version:
42285-WSPE-EX-ON-FG-OL-5449	2.0

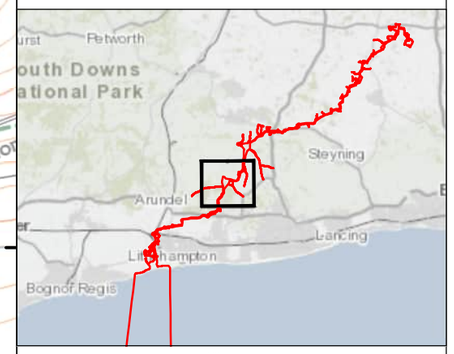
Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WSP	HADJE	SUTET	25/04/2024	FINAL

Key

Proposed DCO Order Limits

No surface construction works (in accordance with the Authorised Development) between October to February inclusive

Note. Areas in green identified as floodplain (Flood Zones 2 and 3).



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British National Grid Transverse Mercator

Rampion Extension Development

Rampion 2 WIND FARM

Rampion 2 Offshore Wind Farm

Figure 1.1d Seasonal restrictions for construction due to terrestrial ecology commitments

System Identifier:	Version:
42285-WSPE-EX-ON-FG-OL-5449	2.0

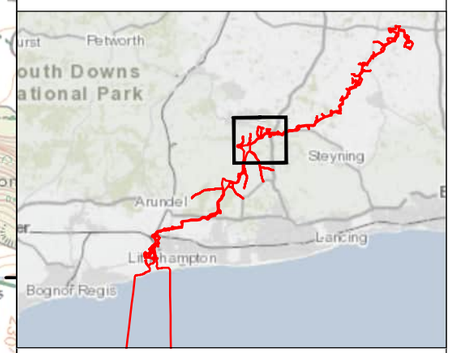
Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WSP	HADJE	SUTET	25/04/2024	FINAL

Key

Proposed DCO Order Limits

No surface construction works (in accordance with the Authorised Development) between October to February inclusive

Note. Areas in green identified as floodplain (Flood Zones 2 and 3).



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British National Grid Transverse Mercator

Rampion Extension Development

Rampion 2 WIND FARM

Rampion 2 Offshore Wind Farm

Figure 1.1d Seasonal restrictions for construction due to terrestrial ecology commitments

System Identifier:	Version:
42285-WSPE-EX-ON-FG-OL-5449	2.0

Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WSP	HADJE	SUTET	25/04/2024	FINAL

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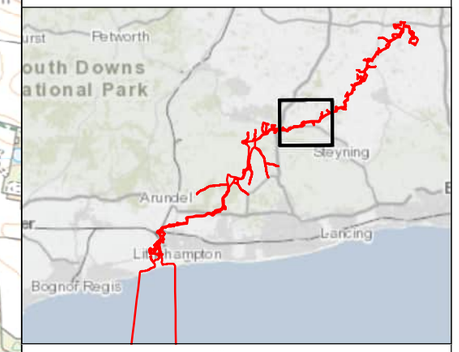
Key

Proposed DCO Order Limits

No surface construction works (in accordance with the Authorised Development) between October to February inclusive

Note. Areas in green identified as floodplain (Flood Zones 2 and 3).



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British National Grid Transverse Mercator

Rampion Extension Development

Rampion 2 WIND FARM

Rampion 2 Offshore Wind Farm

Figure 1.1e Seasonal restrictions for construction due to terrestrial ecology commitments

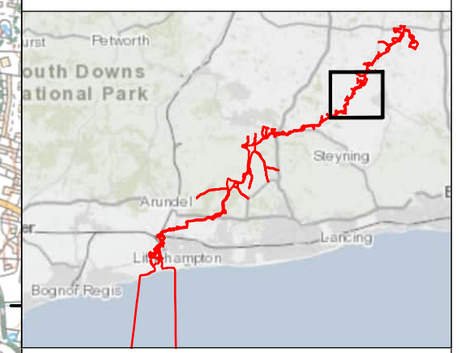
System Identifier:				Version:
42285-WSPE-EX-ON-FG-OL-5449				2.0
Company: WSP	Drawn By: HADJE	Chk/Aprvd: SUTET	Drawn Date: 25/04/2024	Status: FINAL

Key

Proposed DCO Order Limits

No surface construction works (in accordance with the Authorised Development) between October to February inclusive

Note. Areas in green identified as floodplain (Flood Zones 2 and 3).



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British National Grid Transverse Mercator

Rampion Extension Development

Rampion 2 WIND FARM

Rampion 2 Offshore Wind Farm

Figure 1.1f Seasonal restrictions for construction due to terrestrial ecology commitments

System Identifier:	Version:
42285-WSPE-EX-ON-FG-OL-5449	2.0

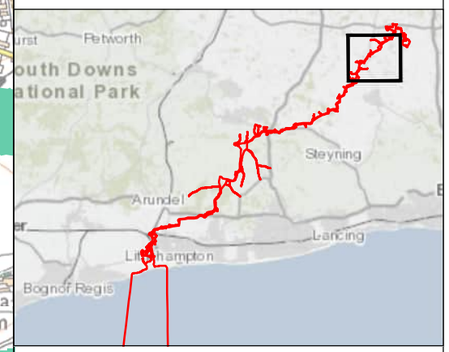
Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WSP	HADJE	SUTET	25/04/2024	FINAL

Key

Proposed DCO Order Limits

No surface construction works (in accordance with the Authorised Development) between October to February inclusive

Note. Areas in green identified as floodplain (Flood Zones 2 and 3).



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British National Grid Transverse Mercator

Rampion Extension Development

Rampion 2 WIND FARM

Rampion 2 Offshore Wind Farm

Figure 1.1g Seasonal restrictions for construction due to terrestrial ecology commitments

System Identifier:	Version:
42285-WSPE-EX-ON-FG-OL-5449	2.0

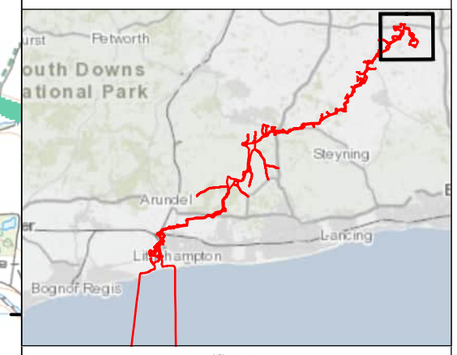
Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WSP	HADJE	SUTET	25/04/2024	FINAL

Key

Proposed DCO Order Limits

No surface construction works (in accordance with the Authorised Development) between October to February inclusive

Note. Areas in green identified as floodplain (Flood Zones 2 and 3).



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British National Grid Transverse Mercator

Rampion Extension Development

Rampion 2 WIND FARM

Rampion 2 Offshore Wind Farm

Figure 1.1h Seasonal restrictions for construction due to terrestrial ecology commitments

System Identifier:	Version:
42285-WSPE-EX-ON-FG-OL-5449	2.0

Company:	Drawn By:	Chk/Aprvd:	Drawn Date:	Status:
WSP	HADJE	SUTET	25/04/2024	FINAL

Appendix H
FS: Noise Thresholds for Black Seabream

Introduction

Overview

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.

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), submitted with the DCO Application **[APP-045]**.

Purpose of this Document

This document provides further information requested in response to the Examining Authority's questions published 3 April 2034, for response at Deadline 3.

Response to FS1.5

FS 1.5 – Noise Thresholds for Black Seabream: The MMO suggests a threshold of 135db SELss is used (as per *Hawkins et al*, 2014) for the reasons set out in section 7.1.6 [REP2-035]. Please respond to the MMO comments in this section of their submission. Furthermore, if this threshold was adopted by the Applicant, please set out how that would affect mitigation such as zoning of piling, using diagrams where possible.

The Applicant has provided detailed responses to the MMO's comments in **Applicant's Comments on Deadline 2 Submssions** **(document reference 8.55)**. In summary, the Applicant maintains their position that the 141dB SELss threshold (as defined by Kastelein et al. (2017)) is appropriate to inform the potential for behavioural effects on black seabream (*Spondyliosoma cantharus*). The 131dB SELss and 135dB SELss thresholds as proposed by the MMO are not considered applicable for the Proposed Development, as they are not supported in the literature (Hawkins et al., 2014) for use in impact assessments and nor are the results of the study applicable to a busier sea area (i.e. the English Channel) with much higher background noise levels.

Notwithstanding this, as requested by the ExA, the Applicant has set out piling mitigations as defined using a threshold of 135dB SELss for behavioural responses (based on the findings of Hawkins *et al*. 2014). For context, the Applicant has also set out the proposed mitigations as defined using 141dB SELss threshold.

Spatial and temporal zoning plan design

Zoning Exercise

A revised zoning exercise has been undertaken to delimit areas of the Rampion 2 offshore array area where piling could be undertaken whilst maintaining noise levels below a 135dB SELss threshold within the Kingmere Marine Conservation Zone (MCZ). Where areas within which noise modelling indicated immission levels at the MCZ would exceed this threshold, noise abatement mitigation is proposed, and noise propagation re-modelled to identify distance limits from the MCZ at which the required noise threshold could be achieved at receptor locations. These outputs are then used to develop a zoning plan of areas that are subject to specific mitigation values (including the delineation of piling exclusion boundaries and the application of noise abatement systems) during sensitive periods for black seabream at Kingmere MCZ during the spawning/nesting season.

Underwater noise modelling has been undertaken for the worst-case piling scenarios with noise abatement systems implemented, for both the installation of monopile and multileg foundations. The following worst-case piling scenarios have been modelled:

- 13.5m diameter monopiles, 4,400kJ hammer energy; and
- 4.5m diameter pin piles for multileg foundations, 2,500kJ hammer energy.

The modelling outputs depicted in a set of figures presented below define areas within which mitigated piling using a combination of noise mitigation or abatement techniques serves to reduce received noise levels at the relevant MCZs below the disturbance threshold of 135dB SELss. The remaining areas of the offshore array therefore become piling exclusion areas, as the available mitigation techniques do not provide sufficient noise reduction to ensure that noise immission levels at the MCZs are below this threshold.

Taking this forward and using the assumption of the maximum design scenarios for both monopile and multileg foundations, Figure H-1 to Figure H-4 show the Rampion 2 boundary alongside the Kingmere MCZ, with the Beachy Head East and West MCZs and the Selsey Bill and the Hounds MCZ also presented for information.

Since Deadline 2, the Applicant has held discussions with the Institute of Technical and Applied Physics (ITAP) regarding the implementation of noise abatement measures in the English Channel. ITAP have been heavily involved in biological monitoring for impulsive noise for offshore windfarms in Germany, following the implementation of an underwater noise limit for impulsive noise.

What has become apparent during this process is that noise reductions delivered through currently available noise mitigation or abatement systems may not reliably deliver reductions greater than 20dB. Whilst greater noise reductions could be possible through equipment development or improvement, or through methodology adaptation in the future, and in consideration of the currently understood soil conditions and bathymetry at the Proposed Development site, the Applicant has therefore sensibly adopted a precautionary approach in developing the zoning plan. The zoning plans depicted in the Figures below present the results for achieving a threshold of 135dB SELss and also, for comparison, the 141dB SELss threshold.

The consideration of site characteristics and noise abatement levels undertaken by ITAP, whilst still to be completed, shows achievement of the 20dB reduction within certain depth and other parameters from the implementation of two noise abatement systems. The noise abatement of up to 20dB (rather than 22dB or 25dB as presented in the **In Principle Sensitive Features Mitigation Plan [REP1-012]** (updated at Deadline 3),) has therefore been modelled for monopile and multileg foundations, to establish the potential implications on the proposed mitigation measures (as detailed in the **In Principle Sensitive Features Mitigation Plan [REP1-012]** (updated at Deadline 3),). The underwater noise abatement of up to 20dB is to be achieved through the use of a combination of measures, comprising the DBBC as the principal measure, together with, for the purposes of the modelling and zoning exercise, the PULSE or MNRU hammer mitigation, although the Applicant notes that the actual equipment to be used during the construction of the Proposed Development will be selected based on the most appropriate equipment available at the time. The primary objective of the mitigation is obviously to achieve the required noise reduction levels (and thereby respect an agreed threshold at the sensitive receptor location) rather than specify precise equipment at this stage. To ensure direct comparison of the difference to the zoning plan (exclusion areas) that targeting a threshold of 135dB SELss rather than the proposed 141dB SELss noise level, both are shown in the Figures below. The blue area on each plot shows the piling exclusion areas derived from the modelling, according to the following scenarios:

- Piling of monopiles, with DBBC + PULSE or MNRU hammer mitigation (20dB reduction) (135dB SELss threshold) (Figure H-1);
- Piling of monopiles, with DBBC + PULSE or MNRU hammer mitigation (20dB reduction) (141dB SELss threshold) (Figure H-2);
- Piling of multileg foundations, with DBBC + PULSE or MNRU hammer mitigation (20dB reduction) (135dB SELss threshold) (Figure H-3); and
- Piling of multileg foundations, with DBBC + PULSE or MNRU hammer mitigation (20dB reduction) (141dB SELss threshold) (Figure H-4).

Figure H-1 Piling exclusion zone for the piling of monopiles, with 20dB reduction (Unwtd 135dB SELss)

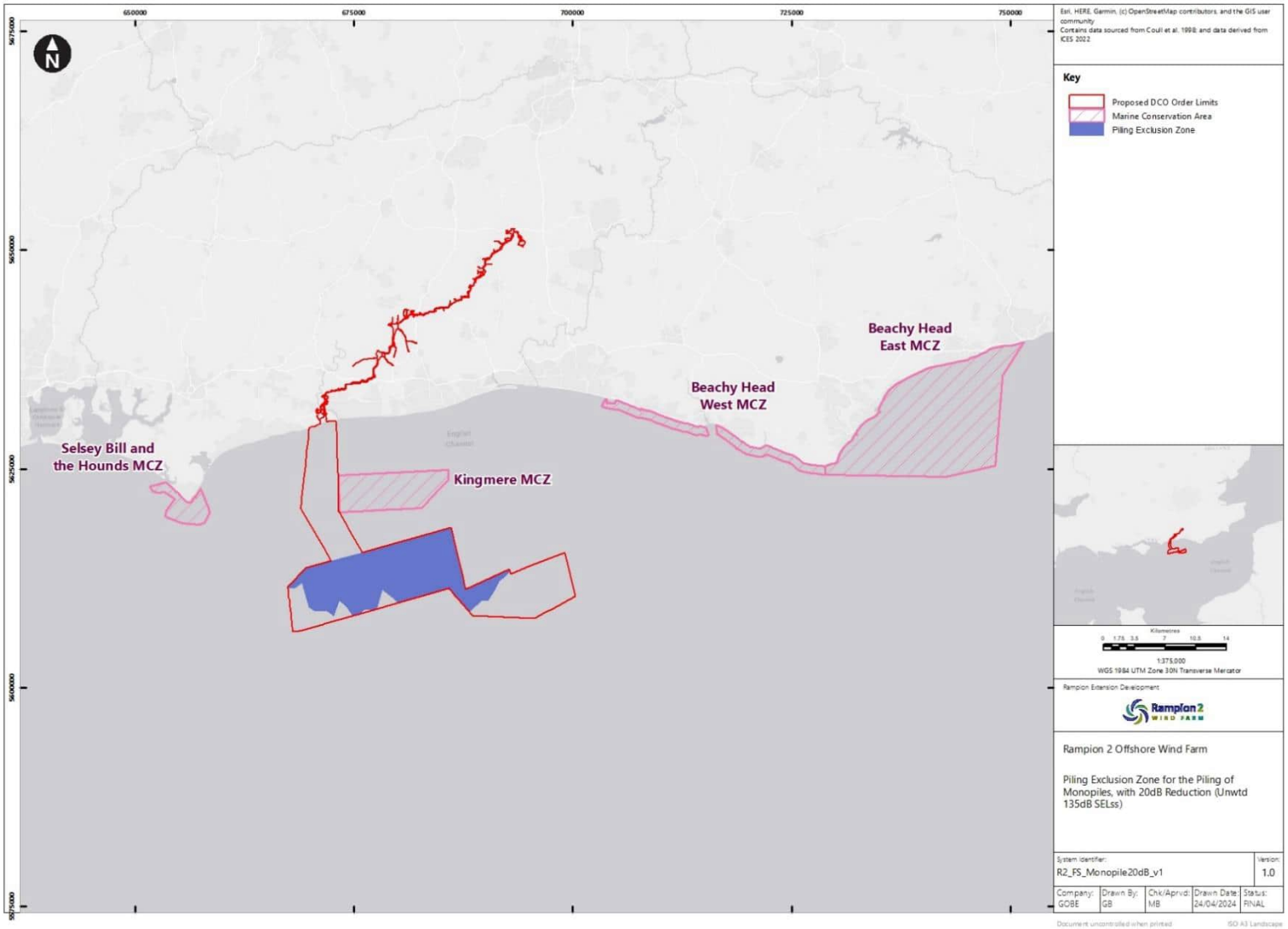


Figure H-2 Piling exclusion zone for the piling of monopiles, with 20dB reduction (Unwtd, 141dB SELss)

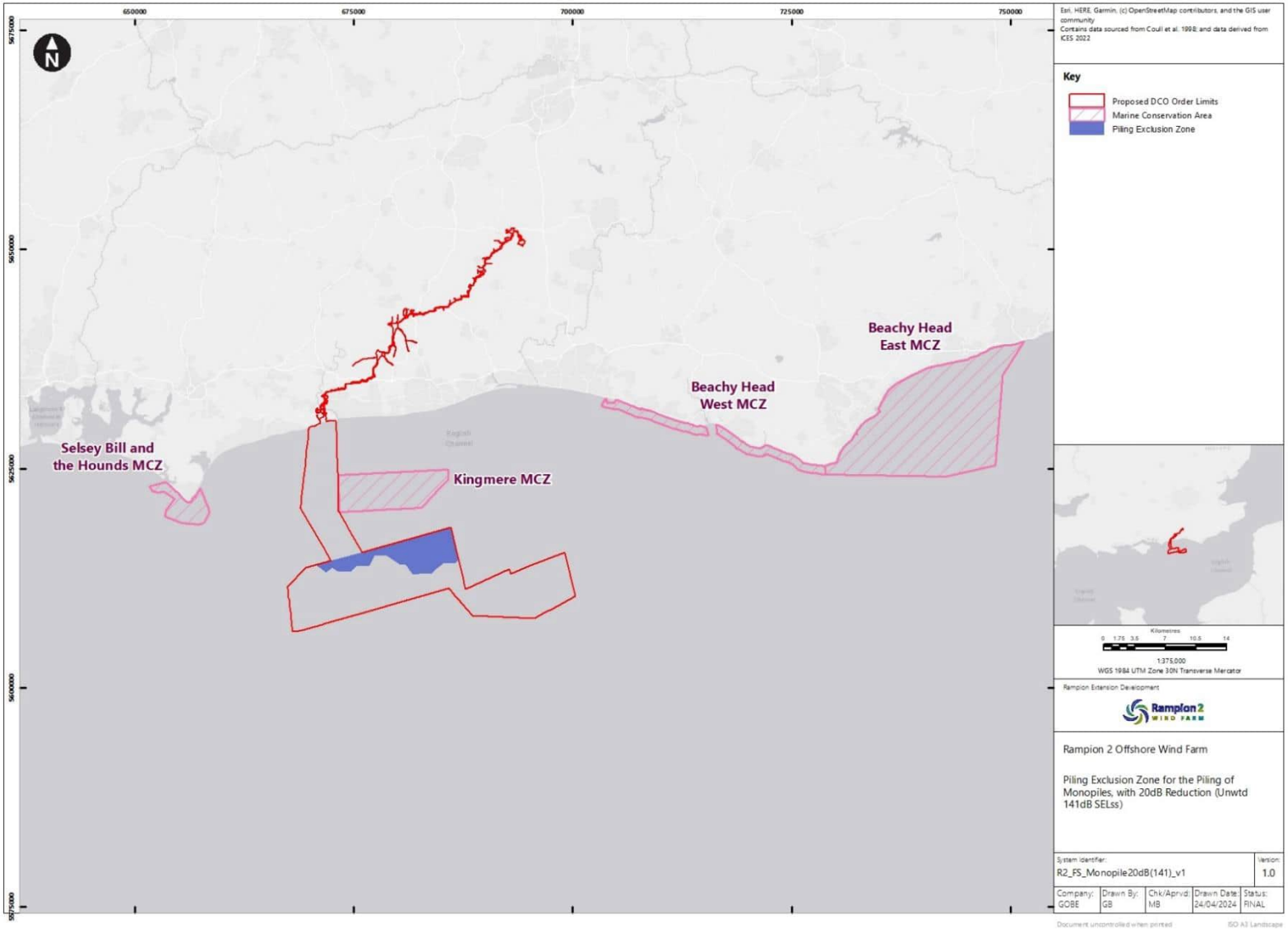


Figure H-3 Piling exclusion zone for the piling of multileg foundations, with 20dB reduction (Unwtd 135dB SELss)

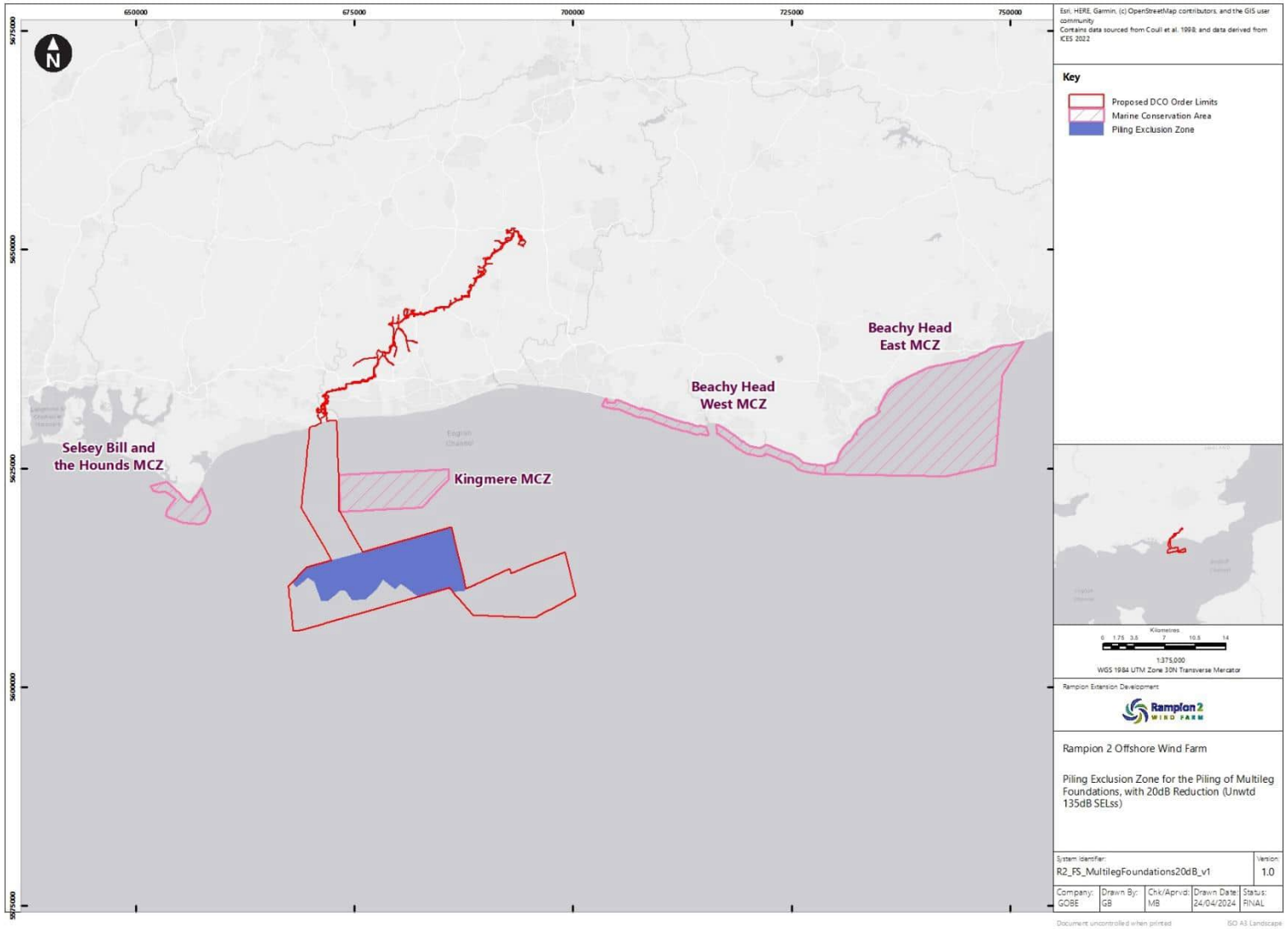
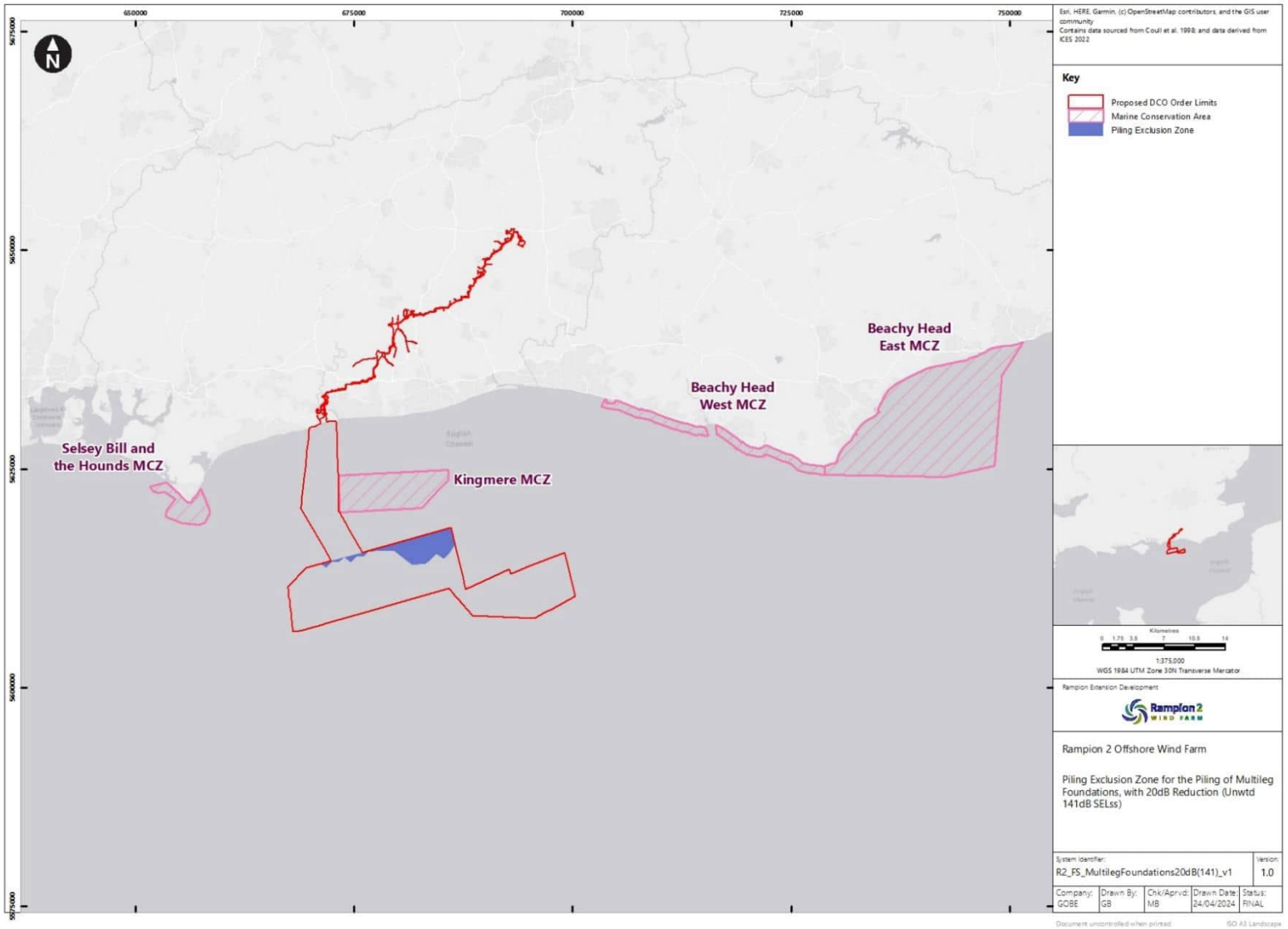


Figure H-4 Piling exclusion zone for the piling of multileg foundations, with a 20dB reduction (Unwtd 141dB SELss)



It is clear from Figure H-1 to Figure H-4, to achieve a level of received noise no more than 135dB SELss at the Kingmere MCZ site, the piling of multileg or monopile foundations with the implementation of DBBC + PULSE or MNRU hammer mitigation (20dB mitigation) results in significant piling exclusion zones being required across the western portion of the array area.

As evident in Figure H-1 and Figure H-2, the piling of monopile foundations with 20dB mitigation results in a substantially larger piling exclusion area in the northern section of the offshore array area for the 135dB SELss threshold in comparison to 141dB SELss. Due to the reduced hammer energy when piling multileg foundations, compared to that of monopiles, the impact ranges are smaller under the same mitigation scenarios, therefore the defined piling exclusion zones are also smaller (Figure H-3 and Figure H-4), though again the use of the 135dB SELss behavioural threshold (which is not applicable for a noisy environment such as the English Channel) to inform the zoning exercise has led to the definition of significantly larger piling exclusion zones than those defined using the 141dB SELss threshold. The Applicant highlights that the exclusion zones resulting from the 135dB SELss target noise level, which encompass the majority of the western array area, will have significant implications on the mitigation measures proposed in the **In Principle Sensitive Features Mitigation Plan [REP1-012]** (updated at Deadline 3),), and consequently the, piling programme. Such implications are detailed below.

Piling restrictions and mitigations

Taking into account the exclusion zones presented, as defined using a threshold of 135dB SELss for behavioural responses (based on the findings of Hawkins *et al*. 2014), the piling mitigations (both spatial and temporal) are as followed:

March to June

To summarise, the mitigation measures proposed in the **In Principle Sensitive Features Mitigation Plan [REP1-012]** (updated at Deadline 3), from March to June, are:

- From 1st March to 30th June, during the majority of the black seabream nesting period, no piling will be undertaken in the western part of the array area.
- Piling in the eastern portion of the array will be subject to mitigation using a combination of mitigation/abatement techniques (illustrated here as of a low noise hammer technology and DBBC.
- A zoning approach will also be implemented, with piling in the eastern area commencing in the southeast corner (area furthest away from the Kingmere MCZ) (band A buffer, as illustrated in Figure H-6), and progressing across the array as piling operations continue (into band B, then C etc.).

The proposed mitigations from March through to June, as defined using the 135dB SELss threshold with a 20dB noise abatement, can only be applied if multileg foundations are installed. Due to the larger underwater noise impact ranges from the piling of monopile foundations, and the correspondingly large exclusion zones required, the mitigations proposed the **In Principle Sensitive Features Mitigation Plan [REP1-012]** (updated at Deadline 3), cannot be applied if monopile foundations are installed. This will undoubtably

have significant implications on the piling programme for the project. Such implications are detailed in Section 0 of this clarification note.

July

To summarise, the mitigation measures proposed in the **In Principle Sensitive Features Mitigation Plan [REP1-012]** (updated at Deadline 3), for July, are:

- If piling in the western part of the offshore array is to be undertaken, foundation installation will be conducted using the combination of a low noise hammer technology and DBBC.
- Piling activities in the western part of the array will also be subject to a sequencing plan such that piling in July will commence at locations of the western part of the Array furthest from the Kingmere MCZ. Piling will commence from the pile locations in the furthest south-west corner of the western part of the Array (commencing in the band C buffer shown on Figure H-6).

During July, the exclusion zones as detailed in the **In Principle Sensitive Features Mitigation Plan [REP1-012]** (updated at Deadline 3) cannot be applied if they are defined using the 135dB SELss threshold, with a 20dB noise abatement. This is due to the exclusion zone encompassing the majority of the western part of the array for the piling of both monopiles and multileg foundations. This will undoubtably have significant implications on the piling programme for the project. Such implications are detailed in Section 0 of this clarification note.

August through to February

As there is no requirement for a spatial zoning plan for the remainder of the year, there are no changes to the proposed mitigation from the use of the threshold of 135dB SELss for behavioural responses.

Figure H-5 Zoning plan restriction areas

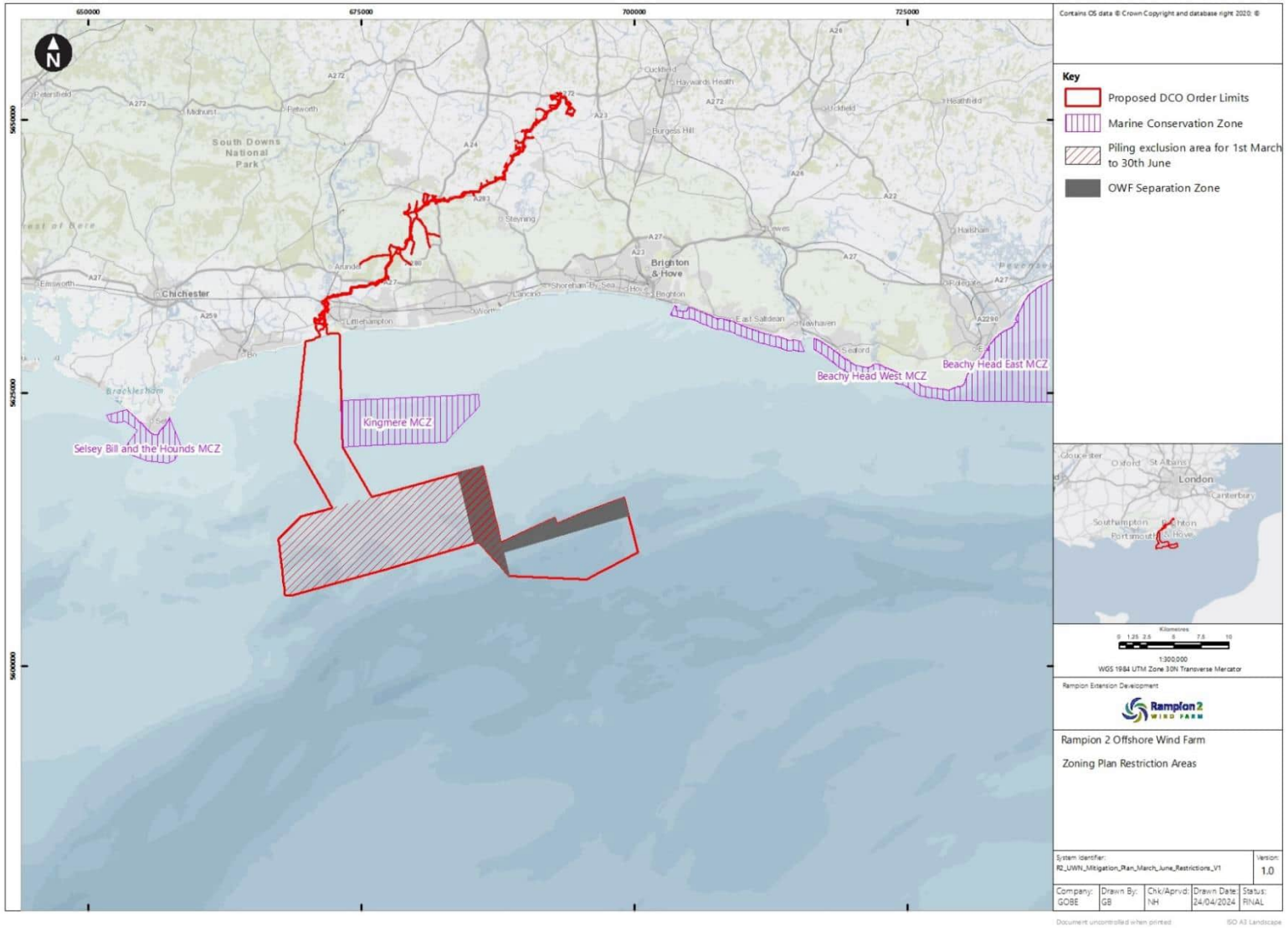
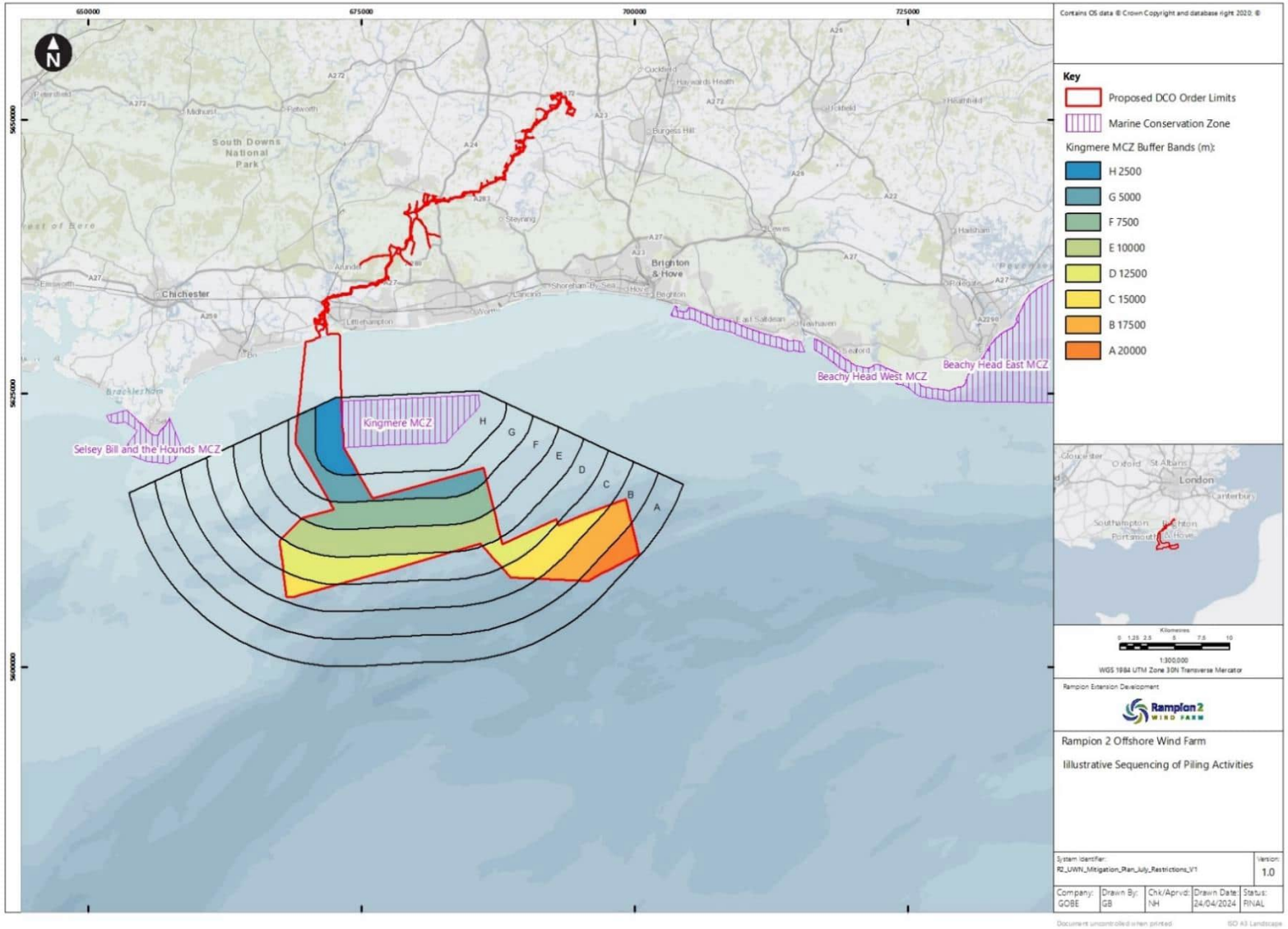


Figure H-6 Illustrative sequencing of piling activities



Piling programme implications

Seasonal restrictions represent a significant hindrance to be able to complete a foundation installation piling campaign, particularly when they are set within the spring and summer months which are the periods operational weather restrictions are generally at their lowest and work can proceed in the most efficient manner possible. The Applicant has proposed a seasonal restriction covering the western array area, which is closest to the Kingmere MCZ during the most sensitive period for black seabream spawning (March to June inclusive) and proposed that piling works are spatially limited in the western array area during July and in the eastern array area during March to July inclusive.

To enable a viable construction programme with the bounds set out within the ES it is almost certain that the project will have to utilise a two-installation vessel strategy, which has been the practical solution on projects where similar restrictions have been present. This will involve committing to piling works outside of what are the ideal working months generally used for offshore wind construction and add more weather risk related costs. However, this approach does come with more onerous procurement risks on being able to secure both suitable installation vessels and some of the key installation equipment such as hammers, as opposed to a single vessel campaign without seasonal restrictions. A two-vessel strategy will also have additional costs associated with engineering for two vessel spreads and will require a greater degree of marine co-ordination. Despite adding considerable cost, the application of noise abatement methods will have only a minimal impact to the scheduling for proposed piling works. The application of any further seasonal restrictions, particularly for July which is one of the least weather restricted months, is likely to significantly affect the construction viability of the envisaged project size.

The alternative approach to working around the piling restrictions would be to significantly reduce the scale of the wind farm. The scale of the wind farm will be the ultimate determining factor as to whether it will be considered viable and subsequently constructed. This application has been designed with a generation capacity of approximately 1,200MW in mind and details a 400kV connection and an associated transmission design to reflect this large generation capacity. This includes a new onshore substation and relatively long export cables. Therefore, the application allows for required flexibility on the final design, as the scale of the wind farm will need to be sufficiently large be able to pay for the use of the transmission assets used to connect it as well as maximising energy generating potential in response to Government policy.

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Appendix I
MM: Noise Abatement Systems

Introduction

The Project

Rampion 2 Offshore Wind Farm (hereafter referred to as “Rampion 2” or “the Proposed Development”) is a proposed expansion of the existing Rampion offshore wind farm (Rampion 1) located in the English Channel off the Sussex coast. Rampion Extension Development Limited (hereafter referred to as ‘the Applicant’) is developing Rampion 2.

Rampion 2 will be located between 13 km and 26 km from the Sussex Coast in the English Channel and the offshore array will occupy an area of 160 km^2. Rampion 2 turbines will be up to 325m blade tip height. Subsea cables will connect the WTGs to up to three offshore substations, and up to four cables from these substations will transfer the electricity onshore.

The onshore parts of Rampion 2 comprise cable circuits to be buried underground along a route of approximately 38.8 km from a landfall at Climping in West Sussex to a new onshore substation at Oakendene, near Cowfold. This will then connect to the existing National Grid Bolney substation as the National Grid interface location in Mid Sussex.

The water depth in the array area ranges from 13 m to 65 m below Lowest Astronomical Tide (LAT) and the spring current speeds within the Coastal Processes study area range from 0.75 and 1.1m/s in the offshore array areas, reducing gradually from 0.9 m/s at the offshore end of the export cable corridor to 0.5 m/s at the landfall (**Chapter 6: Coastal processes, Volume 2** **[APP-047]**).

For the offshore installation the maximum parameters assumed is up to 90 wind turbine generators (WTGs) supported on either 90 monopiles of 360 pin pile foundations (assuming 4 legs per multileg) and 3 offshore substation foundations supported on either 3 monopiles or 18 pin pile foundations (assuming 6 legs per multileg) will be constructed (**Chapter 4: The Proposed Development, Volume 2** **[APP-045]**).

Purpose of this Document

In response to the Examining Authority’s **Written Questions** **[PD-009]** the Applicant is providing this clarification note at Deadline 3 with respect to Noise Abatement Systems (NAS) and the uncertainty of the level of noise abatement achieved.

Noise Abatement Systems

Potential NAS

Table 5-3 of the **Draft Piling Marine Mammal Mitigation Protocol** **[APP-236]** identifies several NAS that has been commercially deployed at offshore wind farm projects.

- Big Bubble Curtain (BBC);
- Double Bubble Curtain (DBBC);
- Noise Mitigation System (NMS);
- Hydro Sound Damper (HSD); and
- Blue Hammer.

Bubble Curtains

Big bubble curtains (BBCs) are the most commonly used NAS for offshore wind farm foundations (Convention on Biological Diversity, 2016; Koschinski and Lüdemann, 2013; Koschinski and Lüdemann, 2020). The technology includes a flexible hose system, which lies on the seabed surrounding the noise source, and is connected to a support vessel equipped with compressors designed to press air into the hose system (Bellmann, 2014). The compressed air escapes from nozzle openings in the hose and in turn creates a continuous flow of bubbles across the water column. Noise propagating through the water is reduced by being scattered, reflected, and absorbed by the air barrier (Koschinski and Lüdemann, 2020; Zhu et al. 2023). BBCs are independent from foundation design and installation vessel but requires a separate vessel which adds additional non-impulsive noise (e.g. vessel engine and compressors) into the marine environment. Another benefit of BBCs far-field NAS ability includes an effective method of mitigating noise that re-enters the water column at distances up to 150–160 m from the pile driving ("ground-coupling effect"; Weilgart, 2023).

BBC systems can be designed to have either a single (BBC) or double (DBBC) row of hoses spaced at least the water depth apart from each other on the seabed. Noise reduction depends on the air supply (volume and pressure), nozzle hose configuration and length, water depth, subsea soil conditions and current direction and speed (Weilgart, 2023). The BBC installation process can be adapted to any construction activity, with an appropriate water depth and current to limit bubble dispersal (Merchant and Robinson, 2020). Acoustic monitoring conducted by Nehls et al. (2016) showed that pile driving for offshore wind farm foundations insulated by a BBC reduced noise level between 9–13 dB for the 50th percentile of the sound exposure level (SEL50) and between 10-17 dB for the peak level at 750 m from the sound source. Results from these data conclude that use of NAS reduced spatial and temporal disturbance effects for harbour porpoise (*Phocoena phocoena*) by up to 90% (Nehls et al. 2016).

Uncertainty

At greater depths (> 40 m) implementation of bubble curtains becomes increasingly difficult due to the dispersion of bubbles in the water column. Additionally, locations with strong currents (> 0.75 m/s) or sub-optimal configurations (e.g. caused by soil conditions, pile conditions, distance between inner and outer bubble curtain for DBBC) contribute to a

decrease in noise reduction (Bellmann et al., 2020). Within the Rampion 2 array area, water depths vary from 17.4 m (NW location for underwater noise modelling) to 53.4 m (S location for underwater noise modelling). Therefore, consideration is required to the efficacy of bubble curtains for monopiles and pinpiles within the array in water depths > 40 m.

If bubble curtains are to be used as mitigation, then increases in performance can be achieved by increasing the air flow, which could mitigate the effect of greater depth.

Tidal currents also influence the efficacy of noise mitigation systems. The tidal currents within the study area are generally energetic with peak spring current speeds between 0.75 and 1.1 m/s in the offshore are areas (**Chapter 6: Coastal processes, Volume 2 [APP-047]**). The effectiveness of bubble curtains may be impacted by higher tidal currents as it could lead to increased bubble dispersion and therefore a reduction of the barrier effect. However, Verfuss et al. (2019) reported maximum current speed for bubble curtain deployment and operations is up to 3 m/s, based on information provided by NAS suppliers.

Hydro Sound Damper (HSD)

HSD is a lightweight, cost effective (no compressors required), reusable system that has no impact on installation times but does require customisation for each project. This technology comprises of netting or frames with gas filled envelope bodies, instead of free bubbles, which mitigate the sound. The distribution and size of the gas filled bodies is variable and depending on the main frequencies of the noise, it is therefore possible to tune the HSD to the conditions. Data from multiple OWF projects in Germany suggest the HSD nets reliably achieve reductions up to 12 dB SEL (Bellmann et al. 2020).

Uncertainty

Noise reduction by HSD is largely independent of water depth and currents. It has been proven to be an effective noise mitigation system in Europe on monopile foundations in water < 40 m and is frequently used in these situations. Where it is expected to be effective in deeper water (> 40 m up to 60 m), the practicability and efficiency of this system at these depths remains to be proven (Koschinski and Lüdemann, 2020; Verfuss et al. 2019). The HSD systems can be used on piles with a diameter of 8 -13 m (Weilgart, 2023); however, this system is yet to be used on jacket foundations (Koschinski and Lüdemann, 2020; Verfuss et al. 2019).

As mentioned in paragraph 0 the maximum water depth within the Rampion 2 array area is 53.4 m; therefore, consideration is required to the efficacy of the HSD, and discussions with manufacturers would be required should Rampion 2 consider this NAS. Additionally, given that the HSD has not been used commercially on jacket foundations there is uncertainty around the level of noise reduction achievable given that pin piles are considered within the project description (paragraph 0).

Blue Hammer

The BLUE Piling hammer replaces the typical steel ram weight of an impact hammer with a large water mass. The resulting blow is considerably longer in duration than a conventional impact hammer, which reduces underwater noise and material fatigue. The pile can be considered to be more “pushed” rather than driven, but in principle, the

technology uses the same methodology as a conventional impact hammer (Weilgart, 2023).

It is expected that there will be less stress on the hammer and no bending or stress fluctuations in the steel. As a result, this could be a cheaper alternative, reducing both fatigue and potentially the need for costly noise mitigation systems.

At a depth of 22 m the noise reduction ranges from 19-24 dB SELss (Winkes, 2018; Verfuss et al., 2019).

Uncertainty

A full-scale prototype has been successfully tested under offshore conditions and improvements on technology are currently being studied and implemented. Operating the hammer on a large enough scale suitable for large monopiles still needs validating (Weilgart, 2023). The environmental limitations for deployment and operations are determined by the installation vessel (Verfuss et al., 2019). Additionally, in the results of the first pilot study of the BLUE hammer, the test was conducted with 6.5 m diameter and 60 m length pile in water depth of 22 m, therefore the data on noise reduction in deeper waters is still lacking.

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Glossary

Term (acronym)	Definition
BBC	Big Bubble Curtain
DBBC	Double Big Bubble Curtain
HSD	Hydro Sound Damper
LAT	Lowest Astronomical Tide
NAS	Noise Abatement System
NMS	Noise Mitigation System
SEL	Sound Exposure Level
SEL50	50th percentile of Sound Exposure Level
SELss	Single Strike Sound Exposure Level
SPL	Sound Pressure Level
WTG	Wind Turbine Generator